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AMERICAN ANTIQUITY

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THE CERAMIC SEQUENCE IN THE ETOWAH DRAINAGE, NORTHWEST GEORGIA

ROBERT WAUCHOPE

POTTERY obtained during 1938–40 in northwest Georgia establishes a ceramic sequence which I shall preview here, since the war delayed even a preliminary analysis of this material for so many years and the final publication will be a long time in preparation.

I am grateful to the University of Georgia and the State Department of Natural Resources, sponsors of the WPA survey which obtained the materials discussed here, for permission to present this preliminary report on the ceramics of the Etowah Drainage. I am also indebted to the Tulane University Council on Research for a grant which enabled Mrs. Wauchope and me to study the pottery in Georgia during the summer of 1946, and to Dr. Arthur R. Kelly, Ocmulgee National Monument, for many official and personal courtesies extended to us during our stay in Macon.

I shall employ the designations for archaeological stages used by Ford and Willey in *An Interpretation of the Prehistory of the Eastern United States*,[1] since these make it unnecessary to refer frequently to many different individual components in chronologically related areas.

ARCHAIC

We have found no fiber-tempered pottery in the northwest Georgia collections so far examined, and I do not remember any at the time of the excavations. As fiber-tempered ware has been reported in adjacent Tennessee, I would not care to state that it is absent in the Etowah drainage, but it is certainly extremely rare in this area compared to the coastal and even the Piedmont regions of the state.

Fabric Impressed pottery (Pl. XVII, A, *top row*), comparable to the Dunlap Fabric Impressed of central Georgia, seems to be the earliest ware we encountered in strength. It was present, at least in small quantities, in collections from thirteen of the fourteen early sites so far studied. In seven surface collections from unstratified early sites, it comprised only a small percentage (0.4% to 4.8%) of the total number of decorated potsherds. At four Cherokee County sites, it was much stronger, ranging from 9.5% to 41.7% of the decorated wares. The "type site" in the Etowah Drainage, however, is Two Run Creek, where we established clearly its chronological position.

Two Run Creek (3–Br) was a mound and village site on the south bank of a stream only a few miles from the famous Etowah site near Cartersville in Bartow County. The village site adjacent to the mound, but antedating it, yielded exclusively early materials. Its lowest stratum contained 98.0% Fabric Impressed pottery, with 2.0% Simple Stamped ware of the Mossy Oak type (Pl. XVII, A, *row 2*).

In the next highest layer of this early village site, the proportion of Fabric Impressed had decreased to 69.9%, Mossy Oak Simple Stamped increased to 9.7%, and a Deptford-like Check Stamped appeared for the first time, comprising 16.8% of the total (Pl. XVII, A, *rows 3–4*).

At the plowed surface of the village, Fabric Impressed dropped further to 46.8%, Mossy Oak Simple Stamped remained about the same (8.5%), and Deptford Check Stamped increased to 42.6%. Here Woodstock Stamped, a ware decorated with line-filled diamond designs, diamond-shaped ovals, and sometimes with small circles attached near the corners of these elements, appeared for the first time. One should not confuse Woodstock Stamped, because of the above brief identification, with either Swift Creek Complicated Stamped or Napier Stamped. We shall see later that it is distinct.

By the time the Indians started building the

[1] Ford and Willey, 1941.

mound, Late Swift Creek pottery was predominant, comprising 63.7% of the decorated potsherds, while earlier wares made up 26.0% of the total. Evidently the site had been abandoned between the time of village occupation and the first mound stratum. The layers from here up are interesting from the point of view of tracing the fortunes of Fabric Impressed pottery, however, for at mound base (Stratum 1), this ware comprised only 4.8% of the early types and only 1.0% of the total. Higher in the mound (Stratum 6) it disappeared entirely.

Since Fabric Impressed pottery appears at Two Run Creek in the earliest level at full strength and associated only with a small percentage of Mossy Oak Simple Stamped, and since it gradually decreases as the other early wares appear (Deptford Check Stamped and Woodstock Stamped), it is clearly the earliest majority ware in the Etowah Drainage. Since it antedates the pottery types related to the Deptford wares of coastal Georgia, I have assigned it here to the Archaic stage as defined by Ford and Willey. It is presumably later than the fiber-tempered pottery of the low country. Associated with the second layer of the village site, when Fabric Impressed was still predominant but declining, Mossy Oak had increased, and Deptford Check Stamped was coming in strong, were a flexed burial in an oval grave and a round house at what was then the ground level. We also found a refuse pit full of animal bones and stone artifacts, associated with the earliest village layer, but we have not yet studied the material sufficiently to describe it here.

LATE ARCHAIC OR EARLY BURIAL MOUND I

Before proceeding with the other early wares of northwest Georgia, I should remind the reader that the ceramic horizon marking the end of the Archaic and the beginning of Burial Mound I stage has not been fixed to everyone's satisfaction in any one region of Georgia. Ford and Willey place Early Swift Creek and Deptford in the Archaic, with the comment that linear check, bold check, and simple stamped decorations on sand-tempered pottery appeared in the late Archaic, and that Swift Creek pottery "appeared at the end of the Deptford period and replaced the Deptford decoration styles in the southeastern states."[2] Caldwell and McCann believe that Deptford has more traits in common with a later stage, and propose that Archaic be divided into upper and lower phases.[3] Presumably they would then place Deptford in Upper Archaic.

We shall now discuss a group of pottery types in the Etowah Drainage, at least two of which share many traits with the Deptford of the coast. But since we have completed only a preliminary analysis of our pottery, and have as yet not devoted serious effort to coordinating it with architecture, artifacts, burials, or other cultural traits, it seems unwise for me to attempt in this article to correlate our north Georgia ceramic sequence too exactly with the trait complexes implied or described in Ford and Willey's early stage designations. I therefore tentatively assign these wares to either the Late Archaic or the Early Burial Mound I stage, in order to indicate their chronological position without implying any cultural classification.

We have seen previously that at Two Run Creek, Check Stamped pottery (Pl. XVII, A, *rows 3–4*) was the next type to appear after Fabric Impressed and Mossy Oak Simple Stamped. It increased from 16.8% in the middle layer of the village, to 42.6% at the surface, where Woodstock Stamped first appeared in small amounts.

The second of the two pottery types similar in many respects to Deptford wares is the bold Simple Stamped (as contrasted with the Mossy Oak Simple Stamped). It may have developed from the Mossy Oak type, but had not done so by the time Mossy Oak's frequency percentage had dropped to 8.5% and Woodstock Stamped had appeared (i.e., at the surface of Two Run Creek village). We do not have a stratified site where we can point exactly to the first appearance of Deptford Simple Stamped in the Etowah Drainage. At Two Run Creek it probably first came in during the period of abandonment between village and mound. But we know from surface collections that Deptford Simple Stamped (Pl. XVII, B, *top row*) predominated at three sites in this area, comprising from 49.8% to 63.7% of all wares found at surface. At two of these sites, Deptford Check Stamped was the second most frequent type, followed by small amounts of Woodstock Stamped, Fabric Impressed, and Swift Creek Complicated

[2] *Ibid.*, p. 339.

[3] Caldwell and McCann, 1941, p. 76.

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Stamped in the order named. At the third site, Woodstock Stamped ranked second, while the minority wares were Swift Creek, Check Stamped, and Fabric Impressed.

The horizontal distribution of Deptford Checked and Deptford Simple Stamped suggests that they were prevalent either at separate phases of the Deptford chronological period, or by geographical locations during the same period. It is clear from the surface collections and from the mound stratigraphy at Two Run Creek that these Deptford wares overlapped at some points with Woodstock Stamped and Swift Creek Stamped, both early and late. If we combine the two types and consider them as one Deptford ware, we can name six sites in Cherokee County where this pottery predominated over all others.

In speaking of Deptford Check Stamped, I have not distinguished between the bold check and the linear check styles. Linear Checked comprises from 2.1% to 6.5% of Deptford Check Stamped at four sites in Cherokee County.

BURIAL MOUND I

In the preceding section, as pointed out previously, I may have told much of the ceramic story of at least the first part of the Burial Mound I stage. Check Stamped pottery continued to wax strong; I do not refer to the later Temple Mound check stamped types, but to the early ware that has many Deptford characteristics. Simple Stamped seems to have grown steadily weaker in its early or Deptford form, although it was to be revived later in Temple Mound types.

Although we have few data on Early Swift Creek pottery (Pl. XVII, B, *rows 2–3*) in this area, I believe we simply failed to find any predominantly Early Swift Creek sites. Woodstock Stamped appeared before Swift Creek Stamped at the Two Run site, and its decorative design resembled Swift Creek design to some extent, but it seems to have increased very slowly, while early Swift Creek must have risen fast, degenerated into its late form (see Burial Mound II), and then declined before Woodstock Stamped reached its peak.

We found Early Swift Creek pottery in large quantities in northeast Georgia. At Two Run Creek mound in northwest Georgia it comprised 19.0% of the Burial Mound I wares at a time when the pottery we assume is a form of Late Swift Creek predominated. I therefore guess that Early Swift Creek followed Deptford in the Etowah Drainage and was the mode style in pottery during the second half, at least, of the Burial Mound I stage, when Two Run was not occupied.

BURIAL MOUND II

Although a detailed description of Late Swift Creek pottery has not yet been published, Kelly has stated that a progressive increase in size of designs, a lessening of rectilinear elements, and a general breakdown in fineness of execution distinguishes it from Early Swift Creek.[4] In these respects, the prevalent ware in the mound at Two Run Creek qualifies as Late Swift Creek pottery. If it turns out later, when Kelly's detailed description of Late Swift Creek pottery is complete, that the two wares are not fundamentally alike, it may be advisable to change the name of the Two Run type, but I believe the latter is certainly closely related to the central Georgia product, and to avoid cluttering the literature with new and unnecessary names, I am taking the liberty of designating this pottery Late Swift Creek. It comprised 63.7% of all decorated pottery in the earliest stratum of the mound, and increased thereafter to 88.0% in Stratum 6 and to 88.2% in Stratum 8 near mound surface. We found no specialized rims, no Lamar Stamped or Lamar Bold Incised; in Stratum 8 were two weathered and very doubtful Etowah Stamped or Woodstock Rectilinear Stamped potsherds.

Taking out the Late Swift Creek pottery in the Two Run mound counts in order to trace the fortunes of our earlier wares in higher relative percentages, we find the remaining earlier wares consisted of the following: Deptford Check Stamped 68.2%, Early Swift Creek Stamped 19.0%, Deptford Simple Stamped 4.8%, Woodstock Stamped 3.2%. Higher in the mound (at Stratum 6), Check Stamped had decreased to 27.3% of these early types, Early Swift Creek comprised 59.1%, Woodstock Stamped increased to 13.6%, and both Simple Stamped and Fabric Impressed had disappeared.

Woodstock Stamped (Pl. XVIII, A, *rows 1–2*) and Napier Stamped (*ibid.*, *row 3*) probably dominated the pottery of the second half of Burial Mound II stage in northwest Georgia.

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[4] Oral communication; see also *News Letter, Southeastern Archaeological Conference*, Vol. 1, No. 2, p. 1, 1939.

We remember that Woodstock Stamped appeared in the Late Archaic or Early Burial Mound I, even before Early Swift Creek, and that it was very slow in developing. At the surface of Two Run Creek village, it represented only 2.1% of the decorated pottery. By the time the mound was started, it had increased to 3.2% of the earliest wares (excluding Late Swift Creek), but in later strata it grew to 13.6%. But on the surface of five unstratified sites in Cherokee County it was the prevalent ware, comprising from 37.4% to 69.6% of the decorated pottery.

We named this ceramic type from a site on the Little River near Woodstock in Cherokee County (2–Ck), where the proportions were as follows: Woodstock Diamond Stamped 61.3%, Woodstock Rectilinear Stamped 13.8%, Woodstock Incised 9.3%, Fabric Impressed 14.1%, Deptford Check Stamped 0.7%, Deptford Simple Stamped 0.2%, Early Swift Creek Stamped 0.5%.

Woodstock Incised vessels (Pl. XVIII, A, *row 2*) are tall cylindrical containers, the sides usually straight or slightly rounded and barrel-shaped. Diameters range from 14 to 34 cm., and walls are from 6 to 8 mm. thick, 7 mm. being the mode. The paste color ranges from black to tan, but 65% is dirt-gray; the exterior is usually gray or dirty tan in color, smoothed and decorated with rectilinear incised patterns, often combined with jabbed punctations in zones. The broad and relatively shallow incised lines form patterns of multiple horizontal lines, often separated from similar groups by zones of diagonal parallel lines or jabbed punctations. Woodstock Rectilinear Stamped designs (Pl. XVIII, A, *row 2*) are fundamentally the same on a reduced scale and in the stamped technique without punctations.

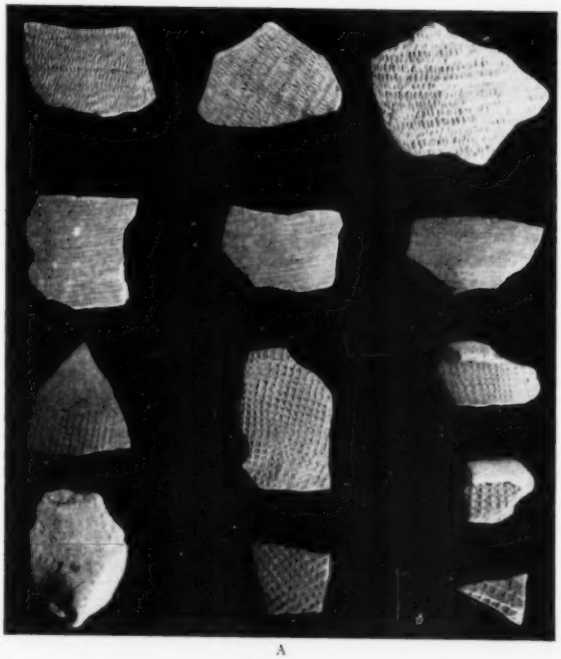
Before proceeding to the Temple Mound stages, we should mention Napier Stamped (Pl. XVIII, A, *row 3*). We found no predominantly Napier sites, although the ware occurred in percentages ranging from 0.1% to 13.7% at seven of the fourteen early sites so far studied. At 21–Ck, the site where it was strongest (13.7%), Woodstock was prevalent, with Simple Stamped and Check Stamped very close behind. At 20–Ck, where it was next most frequent (4.3%), Woodstock was again predominant, with Simple Stamped second, and Early Swift Creek third. Although Napier was absent at the Woodstock site, a fact difficult to reconcile with our other data, I believe Woodstock and Napier were largely contemporaneous, occupying the end of the Burial Mound II stage or a transitional period between it and Temple Mound I.

In surface collections, one would expect the later wares to be absent from more sites than the earlier wares. Napier is generally supposed to have appeared toward the end of Swift Creek. As a matter of fact, we do find it absent from more early sites than any other ware thus far discussed. We have other clues to its chronological position in (1) the fact that in technique of execution, the finest-line Etowah Stamped specimens are indistinguishable from the crudest Napier (differing in designs only), and (2) Woodstock Stamped and some Napier designs are very similar. At the same time, both Woodstock Stamped and Napier Stamped share design features with Early Swift Creek. This is understandable in the case of the former, for Woodstock Stamped appeared before Early Swift Creek and grew steadily during the Swift Creek period; perhaps the same was true of Napier, but due to Napier's consistently small frequency, does not show up as readily in early phase sherd counts.

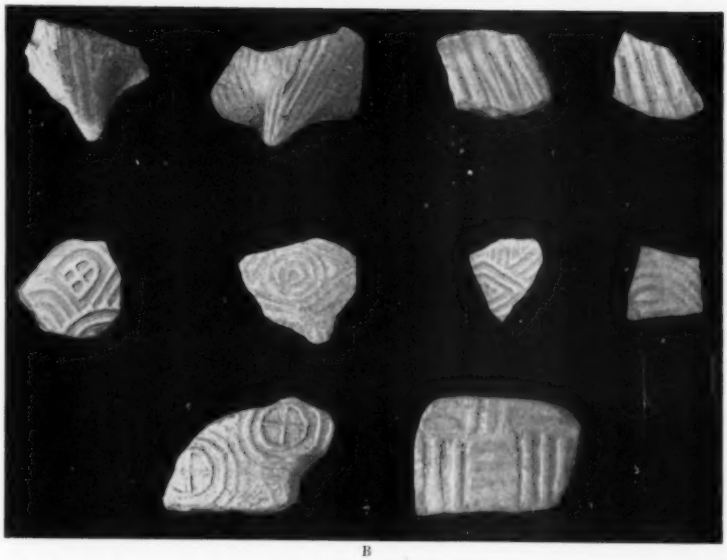
TEMPLE MOUND I

Etowah Stamped (Pl. XVIII, B), Etowah Polished Plain and Incised (Pl. XIX, B), and associated minority wares, such as an unusually decorated pottery which we call Long Swamp Stamped (Pl. XVIII, B, *lower right*) and which we have not seen reported elsewhere, occupy the Temple Mound I Stage in the Etowah Drainage. These wares are particularly abundant in Cherokee County. At full strength, as in Stratum 2 at the site of Long Swamp (1–Ck), they comprise 81.3% of the decorated pottery.

Before describing the full-strength Etowah Stamped sites, I must call attention to the stratigraphy and pottery types at the famous Etowah site near Cartersville. We reached the Etowah site on the Tumlin Farm just before Spring planting, and were therefore limited in our choice of locality to sample, for Mr. Tumlin asked us to dig only in a space of just a few square feet at the downriver end of a deep wide gully that floods have washed out between the river and the mounds. Along the margins of this ravine, a good turf has protected the borders and checked erosion; one can see stratified remains with large midden deposits and refuse pits in the

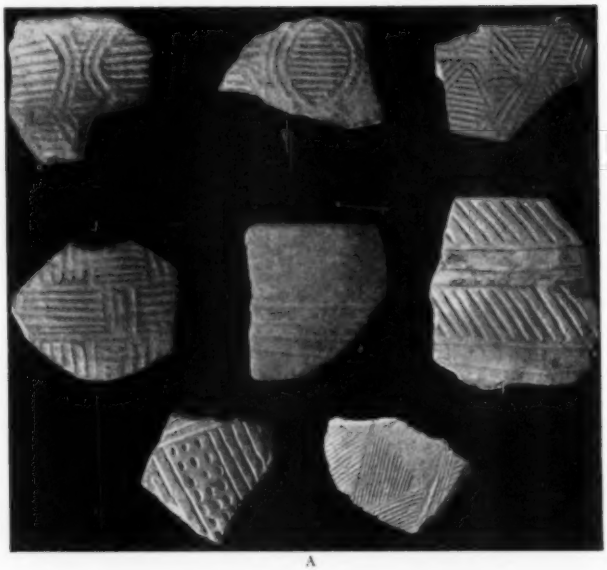


A



B

Pottery from the Etowah Drainage, northwest Georgia. A: *top row*, Fabric Impressed; *row 2*, Mossy Oak Simple Stamped, *rows 3–4*, Check Stamped. (Lower right is Deptford Check Stamped.) B: *top row*, Deptford Simple Stamped; *rows 2–3*; Early Swift Creek.



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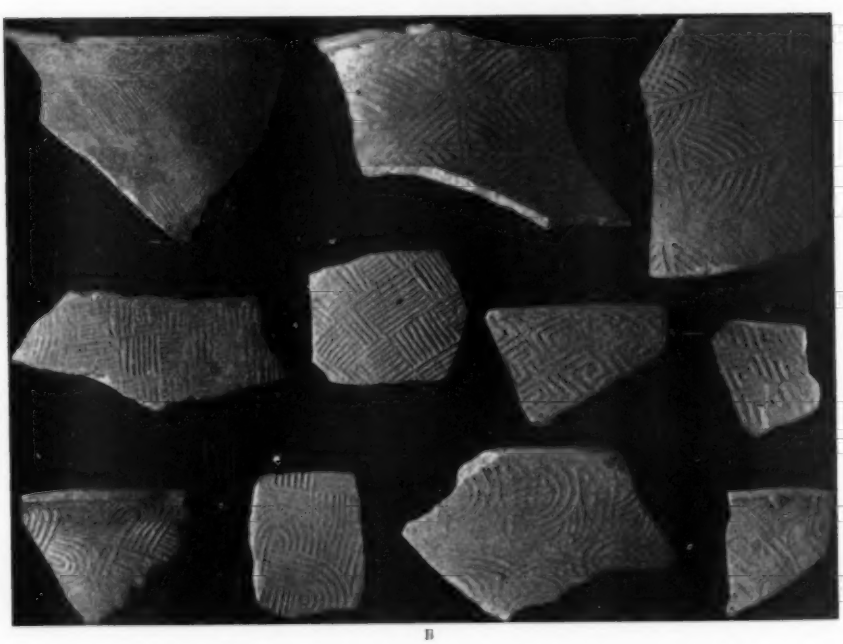


B

Pottery from the Etowah Drainage, northwest Georgia. A: *top row*, Woodstock Diamond Stamped; *row 2*, Woodstock Rectilinear Stamped and Woodstock Incised; *row 3*, Zone Punctate-Incised and Napier Stamped. B, Etowah Stamped and Long Swamp Stamped: *top row*, Napier-like Etowah Stamped and two rectangular concentric triangle designs; *row 2*, lined blocks and frets; *row 3*, filfot cross, interlocking circles, and Long Swamp Stamped (lower right).

gully walls. But at the end assigned to us, the remains were scarce, and erosion caused by successive river overflows had ruined the stratigraphy. By carefully choosing undisturbed sections, sometimes only a foot or two square, we made the best of a poor situation and were able to obtain a fair pottery sample from two small test pits.

Interpretation of the ceramic sequence here is confused by the fact that associated with Etowah Stamped and Etowah Plain Smoothed is a stamped ware that is difficult for me to classify. In many respects it is similar to what I have tentatively called Late Swift Creek in the previous section. At the same time, it closely resembles Savannah Stamped ware which appears in some strength in upper Etowah Stamped layers in Cherokee County sites to be described later in this paper. Obviously, it is quite important to know which it is, but at the present time I confess I do not know, particularly since one can interpret the stratigraphy with equal logic whether one considers the ware Late Swift Creek or Savannah Stamped.

This ware comprised 58.3% of the pottery in the lowest layer at Etowah Site, with 17.2% Etowah Stamped and Etowah Plain Smoothed. There was no Lamar Bold Incised, no Lamar Stamped, no specialized rims, and no early (Burial Mound I stage) pottery. Of the Etowah Stamped potsherds, 51.3% were limestone tempered (the particles had leached out). All the other pottery was sand and grit tempered.

In the uppermost layer (undisturbed humus) we found the proportion of this ware to Etowah Stamped and Etowah Plain Smoothed had decreased, although it was still in the majority. By now, only 28.9% of Etowah Stamped was limestone tempered. In humus of another pit, Etowah Stamped outnumbered it over four to one, but here the sample was very small (only 12 sherds), while the total in the other pit was 503. In the larger sample, 1.4% of the decorated sherds were incised—not Lamar Bold Incised but Etowah Incised.

Thus we have two possible interpretations, depending on how we identify the stamped ware under discussion. If it is Late Swift Creek, one may say that before the appearance of Lamar pottery (which is found in large quantities on the surface here), Late Swift Creek and Etowah Stamped overlapped, the former decreasing as the latter increased. On the other hand, if it is Savannah Stamped, it fits perfectly well into the ceramic sequence in Cherokee County (which I shall describe in a moment) at the point where Savannah Stamped, having appeared rather late in a predominantly Etowah Stamped horizon, is decreasing while Etowah Stamped continues in full strength, just prior to the first appearance of Lamar pottery.

We turn now to three sites in Cherokee County which establish the chronological position of Etowah Stamped relative to Savannah Stamped and Lamar pottery.

Long Swamp (1–Ck) was a village site with the remains of a low mound, probably the historically mentioned Long Swamp village, on the north bank of the Etowah River just below the mouth of Long Swamp Creek near Ball Ground. Seasonal plowing and frequent river overflows had reduced the mound from an estimated height of 10 or 12 feet to a barely perceptible eminence in the flat bottomland. Both mound and village were stratified; we isolated seven layers between barren clay and plowed surface.

Wilbanks Farm (5–Ck) was a similar site on the southeast bank of the Etowah River near Cherokee Mills. Our exploratory trench uncovered 10 superimposed stages of mound construction or occupation, and a group of graves nearby.

Horseshoe Bend (4–Ck) also consisted of a village site and the remains of a low mound, situated in a U-shaped bend of the Etowah a few miles upriver from 1–Ck. We found six stages of mound construction and a few graves nearby.

Long Swamp had a fairly early occupation; pottery of the Burial Mound II stage comprised 56.0% of the decorated wares at mound base, 18.4% consisting of Check Stamped, Simple Stamped, Woodstock Stamped, Fabric Impressed, and Napier Stamped, the remainder being Late Swift Creek. Etowah Stamped comprised 11.9% and Etowah Plain Smoothed 11.0% of the total.

The next three strata contained almost exclusively Etowah Stamped or related wares. Above mound base, Burial Mound II pottery never exceeded 1.5% of the total decorated wares. In Stratum 4, the first Lamar-like incised pottery appeared in very small amounts and in Stratum 5 the first Savannah Stamped (Pl. XIX, A), also in small proportions. Both Horseshoe Bend and Wilbanks Farm confirmed this sequence. At the latter site, the lowermost mound layer contained no pottery of the Burial Mound stages, although we found

surface indications of a village of this period only a few hundred yards away. At both Horseshoe Bend and Wilbanks Farm, however, Savannah Stamped appeared before Lamar Bold Incised, and I am inclined to believe that this was the more general order of appearance.

At Long Swamp and at Horseshoe Bend, Savannah Stamped seems to have been a brief intrusion, since it appeared in small amounts, reached a maximum, and then declined while Etowah Stamped and its ceramic complex continued in majority and Lamar Bold Incised grew stronger. The corresponding stamped ware at Hiwassee Island, Overhill Complicated Stamped (or rather certain sherds of this ware), seems to have been a similar intrusion there, appearing in Phase C of Dallas Component (0.9%) and dwindling quickly to 0.2% in Phase A, while Hiwassee Island Complicated Stamped (similar to our Etowah Stamped) remained the majority ware of these two, and Dallas Decorated (including Lamar Bold Incised) increased to its maximum in a still later stratum (humus).[5]

Chronologically diagnostic traits occur in sufficient numbers to confirm our stratigraphy. In the first layer at Long Swamp, we found a loop handle; in the next layer above, we found a strap handle decorated with nodes. In the third stratum toward the top, riveted loop handles had become extremely rare, and strap handles decorated with nodes or effigies were standard. We found a hooded water bottle in this same layer.

In subsequent strata at Long Swamp were more noded strap handles and some shell-tempered, punctate-incised trade wares. Corresponding layers at Horseshoe Bend yielded a conch shell drinking cup and a negative-painted potsherd.

TEMPLE MOUND II

Lamar Bold Incised and Lamar Complicated Stamped predominate in the ceramics of this stage in northwest Georgia (Pl. XIX, c). Both undoubtedly developed gradually from Etowah Incised and Etowah Stamped, for they appear first in the upper layers of the Cherokee County stratified sites, when Etowah Stamped was becoming much cruder and more Lamar-like both in execution and in design. The filfot cross, for example, was a popular motif in Etowah Stamped pottery, but was much more clearly executed there than in the Lamar Complicated Stamped. In a subsequent section we shall discuss these evolutionary developments.

The stratified sites we excavated did not persist until full Temple Mound II times, or, if they did, the uppermost strata containing Lamar materials in majority have been washed and plowed away. We have surface collections, however, from many "pure Lamar" sites in the Etowah Drainage, that is, sites yielding almost 100% Lamar Bold Incised and Lamar Complicated Stamped pottery. The latter, and often the former too, are characterized by a light blue or whitish-blue surface color and a rough surface finish due to particles of temper pebbling the exterior.

SUMMARY AND DISCUSSION

Fabric Impressed pottery is the first majority ware in the Etowah Drainage. In the earliest stratum we excavated, Mossy Oak Simple Stamped was associated with it, but in very small proportion. Fabric Impressed gradually decreased as Mossy Oak Simple Stamped increased and Deptford Check Stamped appeared. The last named type was soon abreast of the still decreasing Fabric Impressed, and judging from surface collections, it was the prevalent pottery in this area during Late Archaic or Early Burial Mound I times. Deptford Simple Stamped was the majority ware at other sites; these two Deptford types may have predominated during separate phases, or by geographical areas during the same phase. The former seems more likely; of the two, Check Stamped was the first to appear.

In the meantime Woodstock Stamped had appeared, but it was slow in developing, and probably did not reach its frequency peak until much later. Early Swift Creek pottery was probably the mode during the latter part of Burial Mound I. It degenerated in execution and variety of designs, as Kelly has shown, and by Burial Mound II stage we find the predominant ware in the Etowah Drainage was a rather crudely executed curvilinear stamped ware which may turn out to be the same as Kelly's Late Swift Creek. At any rate, we are calling it by this name and, even if it should prove advisable later to give it a new designation, it is still to be considered an outgrowth of Swift Creek Stamped pottery.

Woodstock Stamped had been slowly increasing all this time, and probably at the end

[5] Lewis and Kneberg, 1946, p. 101, Table 19.

of Burial Mound II it was the mode in ceramics in northwest Georgia. In certain features it resembles Early Swift Creek pottery, and it may have developed from Early Swift Creek, although at the stratified site of Two Run it appears before Early Swift Creek. Woodstock Incised, apparently the first incised ware of northwest Georgia, and Woodstock Rectilinear Stamped were contemporaneous with the diamond-shaped motifs of Woodstock Stamped. Napier Stamped came into the Etowah Drainage as a trade ware at this same time; it was always a minority type at the sites we explored. In decorative designs, it bears some resemblance to Early Swift Creek, but is even more like Woodstock Stamped.

Etowah Stamped and its associated ceramic complex very clearly grew out of both Napier and Woodstock. The finest execution of Etowah Stamped is equal to the crudest of Napier. The first two Etowah Stamped motifs, line-filled blocks at right angles to each other and superimposed triangles or concentric diamonds, undoubtedly developed from almost identical, but still slightly different design elements in Woodstock Rectilinear Stamped and Napier Stamped respectively. The surface finish and technique of incising of Etowah Incised and Woodstock Incised are most similar, although the vessel forms and the motifs are distinct.

Etowah Stamped and Etowah Smoothed Plain appeared as Late Swift Creek declined. A large percentage of the former is limestone tempered. Etowah Stamped and its associated wares were predominant during the Temple Mound I stage. In the latter part of this period, Savannah Stamped pottery was intrusive probably as a trade ware, but it soon declined.

Etowah Stamped in the meantime developed several new decorative motifs, chief among which were the filfot cross and the fret. Like Swift Creek and like Napier, the ware gradually degenerated in carefulness of execution, and evolved into Lamar Complicated Stamped. Some of the rectilinear designs and particularly the filfot cross persisted in Lamar Stamped; the specialized rims of some Etowah Stamped pottery were modified and became the familiar pinched, noded, and reed-impressed Lamar rims. The Etowah Incised vessel forms carried over, and the incisions became bolder and cruder, the motifs more circular.

At the end of Temple Mound I, Savannah Stamped, as an intrusive minority ware, declined and disappeared; Etowah Stamped and Etowah Incised and Plain Smoothed gradually gave way to the Lamar forms into which they were degenerating. When both earlier wares disappeared and Lamar was predominant we designate the time as Temple Mound II stage.

I shall not go into much detail on the subject of comparative materials in other regions, because for the most part the tie-ups are obvious. In central Georgia we can find the same early wares in the same chronology through Late Swift Creek and Napier. Etowah Stamped clearly equates with the Macon Plateau period in central Georgia, for the Early Middle Mississippi features are the same, and we find most of the traits of such wares as Bibb Plain, Halstead Plain, and Macon Thick present either as trade specimens or as characteristics of the local wares.

The tradition of stamping, however, was never lost in northwest Georgia as is reported to have been the case in central Georgia. While I am not questioning the fact that it disappeared during Macon Plateau period and reappeared in Lamar at Macon Plateau itself, which was undoubtedly a specialized site, I cannot help but believe that further excavations in the Piedmont will show that stamping was practiced during this period in the immediate vicinity of Macon Plateau, and that the Napier 2 or Etowah Stamped described by Kelly and Willey will prove to be the predominant pottery not only north of Macon but also to the south and east, since it shows up in some strength in the Savannah period at Irene. Nor should we assume that Lamar developed from Etowah ware only in northwest Georgia. Etowah Stamped is present at the Napier site itself, and the same Lamar outgrowths are found in central Georgia as well as north Georgia, indeed as far south as Irene.

At the Irene mound near Savannah, Caldwell and McCann found just about all the same pottery types we found in the Etowah Drainage. The over-all or general sequence is the same, but we cannot check at Irene our more detailed chronological breakdown of the "Middle Period" wares (Late Swift Creek, Etowah Stamped, and Savannah Stamped) because at least two, and possibly all three, are combined in the Irene report under one name, Savannah Complicated Stamped, and assigned to one complex, the Savannah complex. In Figure 18 of the Irene report, the two designs in the lower right corner are Etowah Stamped. The two

immediately above these and one in the upper right corner are typical Etowah Stamped of the latest phase, when rectilinear lines were becoming rounded in the same design elements. It is impossible to say whether the other figures are of Late Swift Creek (as we have used the term for our northwest Georgia sequence) or Savannah Stamped (as we have defined it in our sequence), for identification would depend on other characters such as technique of execution and surface finish, particularly of the vessel interior. The chances would be that the two central figures of the top row are Late Swift Creek or whatever one chooses to call the earlier of the two wares, but Caldwell and McCann state that the interior surface finish of Savannah Complicated Stamped shows "considerable variation ranging from careless smoothing to polishing."[6] This is true of our Etowah Stamped and our Savannah Stamped; our "Late Swift Creek" generally has a pretty rough interior finish.

Critics may feel that I am ignoring Caldwell and McCann's statement quoted below, so I shall comment on it at this time:

> . . . Although there is a very general similarity between Swift Creek Complicated Stamped and Savannah Complicated Stamped, the differences are so many that these two types are to be considered as only distantly related. Also Savannah Complicated Stamped is much later than even late Swift Creek. Deptford Complicated Stamped, a much earlier type in Chatham County, closely resembles Swift Creek Complicated Stamped, however.[7]

I agree fully with every statement in the above passage. The Savannah Stamped at Irene, including as it does such late wares as our Etowah Stamped and "our" Savannah Stamped, is quite different from Swift Creek Complicated Stamped of the early type, and much later than even Late Swift Creek. If, as is reported, all the pottery of the Savannah Stamped category at Irene is smoothed or burnished on the interior, it probably does not include any specimens of what we have designated Late Swift Creek in northwest Georgia. If such is the case, we must assume either (1) that Irene was not occupied between the time when the earliest wares were deposited below mound base and the time when the Indians built Mound I, or (2) that the Wilmington Heavy Cord Marked occupies this chronological position at Irene, since it postdates Deptford Complicated Stamped and antedates Savannah Stamped.

The general ceramic sequence at Hiwassee Island is like that of the Etowah Drainage. The Hamilton Focus pottery corresponds roughly to the wares we have assigned to Late Archaic and Burial Mound I. There is no Hiwassee equivalent of our Two Run Creek mound pottery, "Late Swift Creek," unless it be one sherd illustrated in Plate 51 (middle right) of the Hiwassee report. If this is such a sherd, it would equate with our early Etowah site strata, where the two wares, Late Swift Creek and Etowah Stamped, were contemporaneous (Late Burial Mound II or transitional to Temple Mound I). Lewis and Kneberg's Hiwassee Island Component and the Dallas Component through Phase A probably equate with our Temple Mound I. Included in their Overhill Complicated Stamped, which appeared in Phase C and disappeared in Phase A, are at least two sherds which are probably the same as our Savannah Stamped, the rest being Late Etowah Stamped or Early Lamar Stamped of the transitional type which appeared in the uppermost strata of our Cherokee County sites. Lamar Bold Incised appeared first in Dallas Phase A at Hiwassee, when there was still some Hiwassee Complicated Stamped. I would therefore designate "Present Humus" of the Dallas Component as the first full Temple Mound II deposit there.[8]

With only a ceramic sequence studied so far, it would be unwise for me to attempt an ethnic interpretation of our excavations. Since the investigations in north Georgia were of a survey nature, it is doubtful that we have sufficient materials to do much of this even in our final report, when various cultural manifestations will have been assembled and correlated. So far, however, the most significant fact emerging seems to be the continuity of pottery sequences in this area. I have perhaps overstressed the evolution of wares from Burial Mound I through Temple Mound II stages, but I wished to bring out the important fact that ceramic changes here in the northern part of Georgia are very gradual, the late decorative forms and execution techniques of one "ware" merging almost indistinguishably with the early forms and techniques of another. Neither stamping nor incising disappears. Early Swift

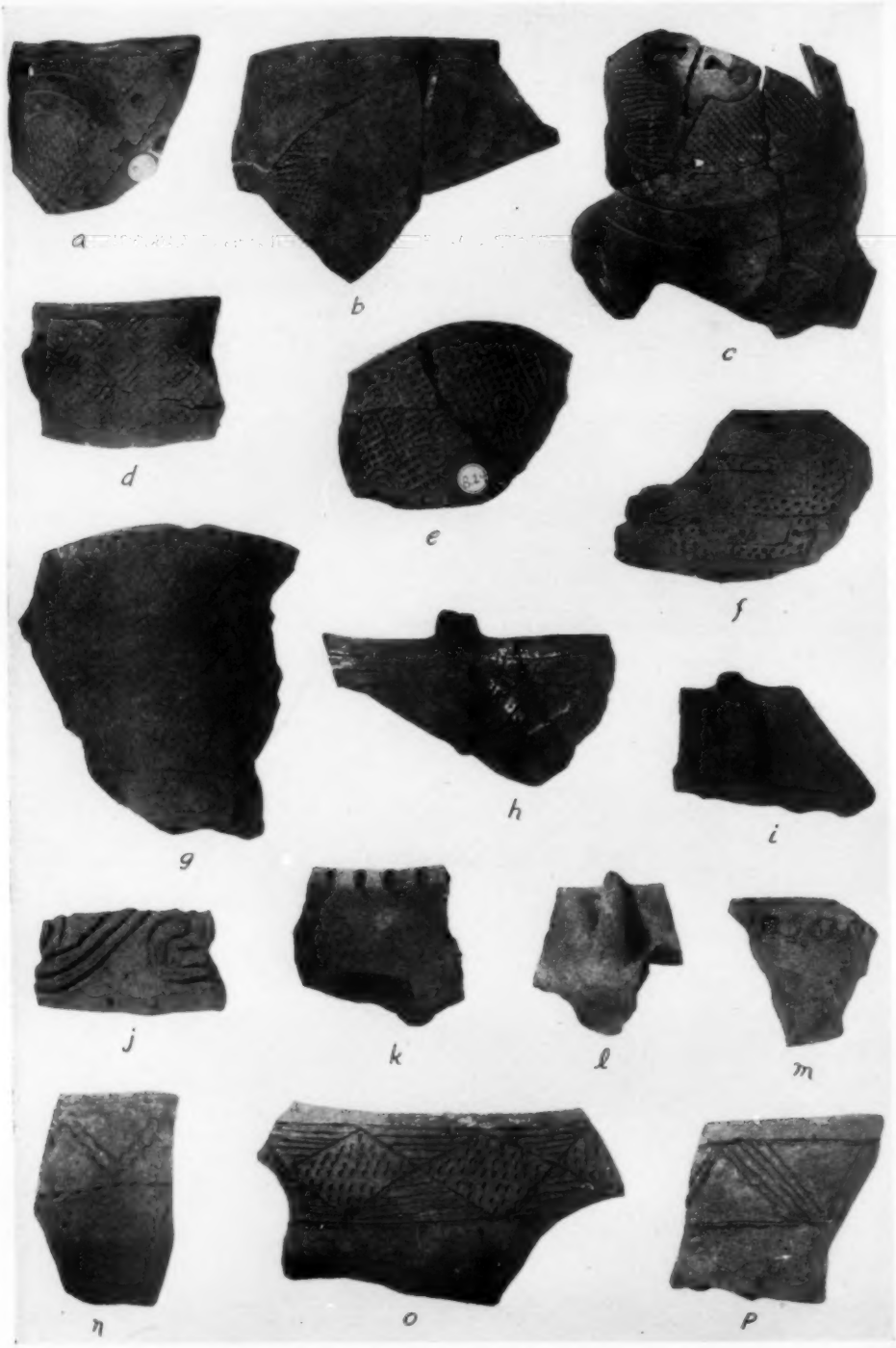
[6] Caldwell and McCann, 1941, p. 45.

[7] *Ibid.*, p. 41.

[8] Lewis and Kneberg, 1946, p. 101, Table 19.

A B C

Pottery from the Etowah Drainage, northwest Georgia: A, Savannah Stamped and (lower right) Macon Thick; B, Etowah Smooth Plain and Incised; C, Lamar Stamped and Lamar Bold Incised.



Pottery Types of the Manatee Region, Florida. (See facing page for identifications.)

Creek designs and technique are clearly related to Woodstock Stamped, which is in turn similar in many respects to Napier; the finest Etowah Stamped is indistinguishable from Napier save in minor details of design, and the latest and crudest Etowah Stamped could be classified as Lamar Stamped. Savannah Stamped seems to appear as an intrusion, yet we have seen that it can be confused with an earlier ware which is probably Late Swift Creek. The surface finish and incised technique of Woodstock Incised and Etowah Incised are very similar, and the vessel forms and design motifs of the latter are clearly related to Lamar Bold Incised.

This continuity is so marked, one is not tempted to link any one ware with the arrival of new ethnic groups, or rather I should probably say that one does not see in ceramics here the sudden impact of a foreign dominating culture. The early Middle Mississippi traits appear at the proper place in the sequence, but they do not obliterate native pottery features. One gets no impression of dominated or dominating complexes or of retreating and returning cultures; nowhere along the line am I tempted to speculate that this is where the Cherokee arrived, or here a group of Creeks was forced into the north country and here they left again.

I am not trying to be facetious or sarcastic. In the first place, survey excavations do not lend themselves well to providing the proper materials for such interpretations; intensive excavation at the Etowah site, for example, might well reflect a more violent ebb and flow of culture complexes. In the second place, there *were* movements of populations and cultures; the Cherokee did arrive sometime. And it is the business of the archaeologist to do all he can to link his materials with these movements, even if he can produce only speculations. Ceramically speaking, however, our north Georgians seemed to rock along relatively undisturbed by the impact of clashing cultures.

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CULTURE SEQUENCE IN THE MANATEE REGION OF WEST FLORIDA

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THIS paper presents data for the reconstruction of a culture sequence in the section of western peninsular Florida that has been referred to as the Manatee region (Goggin, 1947, p. 118). These data have been drawn from the analyses of a group of archaeological sites excavated under the direction of the Bureau of American Ethnology during the peri-

Pottery types of the Manatee Region. *a*, Weeden Island Incised; *b*, Papys Bayou Punctated; *c*, Weeden Island Punctated; *d*, S n City Complicated Stamped; *e*, Old Bay Complicated Stamped; *f*, *g*, Safety Harbour Incised; *h–j*, Pinellas Incised; *k–m*, Pinellas Plain; *n* and *p*, Perico Linear-Punctated; *o*, Perico Incised. (Catalogue numbers: *a*, 369390; *b–d*, 325671; *e*, 369389; *f–m*, 359520; *n*, 383996; *o*, 384000; *p*, 383990. Proveniences: *a–e*, Weeden Island Burial Mound, upper levels; *f–m*, Safety Harbour Burial Mound; *n–p*, Perico Island. Photos courtesy U. S. National Museum, Smithsonian Institution.)

od of 1923 to 1936.[1] A full presentation of this material is planned for a forthcoming report (Willey, N.D. *a*). For the present, this preliminary summary is offered as a companion résumé to previously published reviews of archaeological chronology in northwest Florida (see Willey and Woodbury, 1942, and Willey, 1945).

The sites in question are the Weeden Island and Safety Harbour mounds in Pinellas County, the Thomas mound and Cockroach Key in Hillsborough County, the Parrish mounds and Perico Island in Manatee County, and the Englewood mound in Sarasota County. All except Weeden Island and Safety Harbour are within the limits of what Goggin has defined as the Manatee region or sub-areal division of the Gulf Coast archaeological area. As outlined, the Manatee region extends from the southern end of Tampa Bay down to Charlotte Harbour. The inland extension of the region is tentatively put at about 50 miles. Although Weeden Island and Safety Harbour lie just to the north and west of the line separating the central Gulf Coast and Manatee regions, they are included in this discussion as they serve as basic data points, or type sites, for the interpretation of culture and period among the Manatee sites proper.

The validity of the Manatee region as an archaeological area or sub-area is still open to verification. I am, however, inclined to go along with Goggin in recognizing its value as a geographic expression of certain realities in culture type and culture change over a considerable period of time. Its essential quality and primary usefulness is that it brings into focus the contact and interpenetration of two cultural traditions, the Gulf Coast and the Glades. Geographically and ecologically, the Manatee region is a zone of transition between the mangrove-grown coasts of near-tropical southwest Florida and the open sand beaches of the more temperate west central Florida. The aboriginal cultures of the region reflect this marginal position.

In the following discussion, I will first treat of the cultural complexes and periods that can be considered as predominantly Gulf Coast in content and organization. These are, in their presumed chronological order, the Weeden Island, the Englewood, and the Safety Harbour each represented here by one or more sites. Secondly, I will present evidence for the presence of the Glades culture, in its various period manifestations, in the Manatee region. A final section will correlate the Manatee sequence with other relative chronologies of Florida.

WEEDEN ISLAND

The three sites of the Weeden Island culture which are evaluated in this synoptic presentation are the Weeden Island site proper, on Tampa Bay, the Thomas mound, on the Little Manatee River, and Parrish mound 5, in Manatee County. The first, Weeden Island, was excavated by Fewkes and Stirling in 1923–24 and some of the data and material from the excavations were presented in published form (Fewkes, 1924). The present treatment reviews this earlier study and adds new information based upon a study of the Weeden Island collections now in the U. S. National Museum. Thomas mound and Parrish mound 5 were excavated during the Federal Relief Program of 1935–36 (Stirling, 1935, pp. 378–83; see section on "Little Manatee River, Mound 4").

All three of the sites excavated were burial mounds. At Weeden Island proper domiciliary mounds of sand and shell and refuse middens were also in the site group, and at Thomas a large shell midden was near the burial mound. However, the following descriptions refer only to burial mound units.

The burial mounds are made of sand, are roughly circular in outline and dome-shaped, and range from 50 to 100 feet in diameter and from 4 to 7 feet high. They contain human burials in all parts, from the mound base virtually to the surface. Approximately 400 individuals were taken from the Thomas mound,[2]

[1] I am indebted to Dr. M. W. Stirling for permission to study the field notes and collections pertaining to these sites. Notes are in the possession of the Bureau of American Ethnology. Collections are catalogued as follows in the U. S. National Museum: Weeden Island, 325671, 326944–81, 369387–90; Safety Harbour, 351513–25, 351526–36, 362378–86; Thomas Mound, 384130–291, 384312–13; Cockroach Key, 384292–311; Parrish Mounds, 383190–238; Perico Island, 383972–384055; Englewood Mound, 383165–189. The fieldwork and preparation of the field notes must be credited to Dr. Stirling for Weeden Island and Safety Harbour, to Mr. Preston Holder for the Thomas Mound and Cockroach Key, to Mr. D. Lloyd Reichard for the Parrish Mounds, and to Dr. Marshall T. Newman for Perico Island and Englewood.

[2] This includes burials removed by Mr. Holder, those recovered by Mr. Clarence Simpson in 1937 during his ex-

between 200 and 300 from the Weeden Island mound, and 89 from Parrish mound 5. No convincing physical stratigraphy was noted in the body proper of any of the three mounds. A change in the mode of burial during the Weeden Island period may be indicated in two of the mounds, Weeden Island and Thomas. In both, primary burial, either extended or flexed, was the rule in the lower part of the mound while secondary treatment, including bundles and single skulls, was much more common in the upper portion. There was nothing, in either case, to substantiate any theory of cultural change paralleling this change in burial form. It should be noted with reference to the Weeden Island mound, that this burial stratigraphy does not include the pre-mound or submound burials over which the Weeden Island mound was constructed. This pre-mound level is culturally quite distinct from Weeden Island and will be discussed later.

Cremation was rare, occuring once at Thomas and being unrecorded at Weeden Island. In Parrish mound 5 there were several instances of burned secondary burials or partial cremations, apparently made *in situ*. This partial burning of the bones *in situ* has been observed in other Weeden Island sites farther north (Willey, 1945, p. 235).

Big mortuary deposits of "killed" or intentionally destroyed pottery were found on the mound base at both Weeden Island and Thomas. In addition to the mass deposits, other broken vessels were scattered through the mound fill. Vessels were not placed with individual burials although "killed" conch shell cups and flint projectile points or knives were sometimes so placed.

The pottery from these sites is typical of that inventoried from other mounds of the Weeden Island period in Florida. The sand tempered, well-made types of the Weeden Island series occurred in quantity at both Thomas and Weeden Island.[3] Parrish mound 5 yielded only a few sherds, but these were typical of the Weeden Island ceramic complex. The most common Weeden Island types from these three Manatee region mounds are Weeden Island Plain, Incised (Pl. XX, *a*), Punctated (Pl. XX, *c*), Zoned Red, Carrabelle Incised, and Keith Incised. Wakulla Check Stamped was also abundant. Less common, but present, were complicated stamped types. On the whole these differ from the complicated stamped series found in Weeden Island sites in northwest Florida, although one type, a late variety of Swift Creek Complicated Stamped, is present both at Weeden Island proper and at Thomas. In addition, Sun City (Pl. XX, *d*), Tampa, and Old Bay Complicated Stamped (Pl. XX, *e*) are typical of the Manatee region. Another characteristic type, not found in the north, is Hillsborough Shell Stamped. But perhaps the greatest difference between a Weeden Island ceramic assemblage from the Manatee region and one from northwest Florida is the presence in the south of considerable quantities of the soft, temperless or chalky ware of the Biscayne series. Biscayne Check Stamped and Biscayne Red are two common types. Paralleling the Weeden Island series of types in decorative motifs and vessel forms is another chalky ware series which I have designated as Papys Bayou.[4] The Papys Bayou (Pl. XX, *b*) pottery apparently shows the blending of two ceramic histories, the Biscayne and the Weeden Island. Typical Glades ware was not recorded in the Weeden Island mound collection, except for the material from the pre-mound levels, but at both Thomas and Parrish mound 5, Glades Plain was found in association with Weeden Island types. At Thomas, Belle Glade Plain and Perico Plain, two other Glades complex types, were also present.

Non-ceramic artifacts from these mounds are not plentiful. The greatest number came from Fewke's Weeden Island mound excavations, and there is a difficulty here of determining which artifacts are of the Weeden Island period and associations and which came from the pre-mound strata. We can, however, reasonably assume that medium-sized stemmed, triangular, or ovate-triangular projectile points

cavation of the remainder of the mound, and those reported by C. B. Moore in his excavation of the site in 1900 (Moore, 1900, pp. 358–9; see "Mound near the Little Manatee River, Hillsborough County").

[3] See illustrations in Fewkes (1924); see also Willey and Woodbury (1942, pp. 242–4). Willey (1945, pp. 238–40) has a classification of the Fewkes illustrations according to specific pottery types; see also Willey (1945, Fig. 15) for a selection of Weeden Island pottery.

[4] In Willey (1945) the Papys Bayou types were included with the Weeden Island. As the difference is only one of paste and temper, distinctions cannot easily be perceived in illustrations. As an example, Fewkes (1924, Pl. 11) is Papys Bayou Punctated, not a typical Weeden Island sand-tempered piece.

of flint; plain or duck-effigy stone plummets; conch shell beads; and conch shell cups or bowls are representative of the Weeden Island culture in the Manatee region.

Weeden Island sites are known from the entire Gulf Coast of Florida as far south as the Manatee region (Willey, 1945, p. 226). Weeden Island ceramics occur sporadically even into the Glades proper (Willey, N.D. *b*), but the Thomas mound is one of the most southerly typical stations of this culture. A burial mound of the Weeden Island type has been reported from a key in Charlotte Harbour although the details of this discovery have not been revealed (Goggin, 1947, p. 119). Chronologically, Weeden Island has been placed in the northwest Florida sequence as following out of the Santa Rosa-Swift Creek period and preceding the Ft. Walton. The Weeden Island I and II periods were formulated in the north on the basis of changes in pottery types and percentage occurrences of these types (Willey and Woodbury, 1942, Fig. 26). This division was more successfully applied to stratigraphic investigations in refuse middens than to the mortuary mounds. The presence of both complicated stamped types and Wakulla Check Stamped in the Weeden Island and Thomas burial mounds dates these sites, in terms of the northern sequence, as Weeden Island II and, possibly, Weeden Island I.

In connection with the dating, it should be mentioned that a few Safety Harbour period sherds were found at both Weeden Island and Thomas. It is presumed that these are later intrusives. At the Thomas mound the Safety Harbour period sherds were found superficially along with some objects of European origin.

ENGLEWOOD

The Englewood complex is represented only by the type site, a sand burial mound near Sarasota, Florida (Stirling, 1935, pp. 383–5). It is the southernmost of the group of sites considered in this paper. The burial mound excavated at Englewood was one of two. The other has been reported as also containing burials. Some few hundred yards from the mounds is a shell midden along the water front, presumably the village area of the people who built the mounds. The mound was 110 feet in diameter and 13 feet high. Conical in form, the tumulus was composed of sand, and its interior structure was revealed as a smaller interior mound over which the larger outer mound, or mound layer, had been heaped. Under the inner or primary mound was a shallow burial pit. This had been covered with sand mixed with red ocher before the construction of the primary mound. The absence of any sod-line or weathered surface on the primary mound implied that little time had elapsed after its completion before the secondary mound was put down.

Over 100 burials in the burial pit underlying the primary mound were bundle or single skull interments. Scattered at various depths in the body of the primary and secondary mounds were over 100 others. Most of these were bundle burials, although a few primary flexed burials were among them.

There was no evidence of superimposition in ceramics or other cultural artifacts. The bulk of the pottery from the Englewood mound was in a great mortuary deposit on the mound base. This pottery had either been broken or intentionally perforated.

The decorated ware of the Englewood complex also breaks down into sand-tempered and chalky ware series. Englewood Plain and Englewood Incised are similar in ware quality to Weeden Island types while Sarasota Incised is a chalky ware type in the Biscayne tradition. Biscayne Check Stamped is a majority type at the site, but there is no Wakulla Check Stamped. About 10 per cent of the sherds were definitely Weeden Island types, most of these being of the soft-paste Papys Bayou series. Almost 30 per cent, the bulk of the plain ware, is classified as Glades Plain. Finally, a few Safety Harbour fragments made up the lot.

Non-ceramic artifacts were so few as to be almost inconsequential. Conch shell cups, ceremonially perforated like the pottery, were present. A single *Busycon contrarium* shell hoe, drilled for hafting, was the only shell tool of a type commonly associated with the Glades culture.

The distribution of the Englewood complex is unknown. Presumably, it extends no farther south than the Caloosahatchee River, but there are little data on its northward extension.[8] I would surmise that as a ceramic complex it will be found to be confined chiefly to the Manatee

[8] Moore (1903) illustrates very little Englewood type pottery. The vessel shown on p. 430, Fig. 83, is, however, either Englewood or Sarasota Incised. This specimen came from the Pithlochascootie River in Pasco County.

region. Its chronological position is inferable only on associative and stylistic grounds. The incised pottery decoration is akin to Weeden Island but distinctive in itself. Where Weeden Island is basically a curvilinear style, Englewood is rectilinear. The vessel forms, the execution of the decoration, and the ware quality are superior to Safety Harbour but more limited and inferior to Weeden Island. Unlike Safety Harbour, there are virtually no Ft. Walton or Mississippian features in the Englewood pottery. A single strap handle is the interesting exception to this. This small bit of evidence, plus the association of both typical Weeden Island and Safety Harbour types in the mound, leads me to the tentative conclusion that Englewood had a life span overlapping both Weeden Island and Safety Harbour. The faintness of the Mississippian impress, so clearly marked farther to the north, may in part be accounted for by the extreme southern position of Englewood.

SAFETY HARBOUR

The sites of the Safety Harbour period are Safety Harbour proper, and Parrish mounds 1, 2, and 3. The Safety Harbour site is a mound and midden group in Tampa Bay; the Parrish mounds are situated in northern Manatee County (Stirling, 1935, pp. 378–82, "Little Manatee River Mounds 1, 2, and 3"). At Safety Harbour excavations were confined principally to the burial mound, but the site consists of an extensive midden and a large, flat-topped pyramidal mound as well (Stirling, 1930, 1931). The Safety Harbour burial mound and Parrish mounds 1 and 3 are dome shaped mounds of sand ranging from 5 to 10 feet in height and from 40 to 80 feet in diameter. Their interior structure revealed no complexities or clues to superimposition of building levels. They were clearly made as mortuary mounds, and were found to contain, respectively, anywhere from about 30 to over 200 burials. In all cases these were secondary inhumations; in only one instance was there evidence of cremation or partial cremation of a burial. This last was in Parrish mound 3 where a single secondary cremation was found at a superficial depth in the mound, indicating it to have been one of the last burials placed in the mound.

Parrish mound 2 was more complex, both as to structure and burial type, than any of the other three mounds of the Safety Harbour period. In the first place, the mound appears to have been built both as a mortuary tumulus and as a base for a wooden structure. Excavation revealed that the first activity at the spot later occupied by the mound was the digging and using of a shallow crematory pit. This pit was found filled with ash, charcoal, and burned human bones. Over the pit, the mound, some 6 feet in height and 65 feet in diameter, had been built up of sand. Throughout the body of the mound were remains of 37 cremated secondary burials and 2 uncremated bundle burials. Near mound surface two individuals were found who had been cremated *in situ* in rectangular log crypts. The outstanding feature was, however, the remains of a burned building or enclosure. This had been made, stockade-fashion, of wooden posts driven into the ground. Within the enclosure, in one corner, was a raised platform of sand on which were found a great many partially burned human bones. It is thought that this may have been the place within the building or temple where the bones of the dead had been stored, perhaps in a chest or hamper. With the burning of the building, the bone cache would have been destroyed. Another interpretation is that the raised platform of sand had served as a crematory altar.

At Safety Harbour and Parrish mound 1 "killed" pottery vessels were found on the mound base, where they had been placed in special mortuary deposits. At Parrish mound 3 vessels were "killed" but were often found inverted over or near individual burials rather than put into a common deposit. In Parrish 2, the mound with the burned building or temple, only potsherds were found in the body of the mound and there was no special deposit of ceramics. In all the mounds, other artifacts, of shell or stone or of European manufacture, had been placed with individuals in several instances.

In spite of the divergence in burial preparation and even in the placement of burial goods in the mounds, the four mounds of the Safety Harbour period are remarkably uniform in the types of pottery which they contained. Safety Harbour Incised (Pl. XX, *f*, *g*),[6] a debauched expression of what seems to be the fused end-products of the Weeden Island and Englewood incised and punctated potteries, is present in

[6] A good many examples of this type are illustrated by Moore. See Moore, 1903, p. 435, Fig. 88, upper left and four sherds at lower right; also see Moore, 1905, p. 306, Fig. 6; p. 308, Fig. 11; p. 309, Fig. 14.

all the mounds, as is Pinellas Incised (Pl. XX, *k–m*),[7] a type showing strong influence from the Ft. Walton ceramic patterns. Biscayne types are present in small amounts; and in all of the Parrish mounds the types Glades Plain and Belle Glade Plain are well represented. In Parrish mounds 1 and 3 there are interesting and parallel occurrences of complete vessels of complicated stamped pottery. In decoration, body form, and rim form these vessels are virtually identical with the type Lamar Complicated Stamped as it is found in central and south Georgia (Jennings and Fairbanks, 1939).[8] The only ceramic find chronologically out of line was a group of sherds from Parrish mound 3. These are undoubtedly from a single bowl of the type Papys Bayou Punctated, a definite Weeden Island horizon marker. Its appearance in this context is difficult to explain and can best be considered as a "hold-over" or "antique piece."

Projectile points of chert and chalcedony are more common in the mounds of the Safety Harbour than of the Weeden Island period. There is considerable variation in these. Both stemmed and unstemmed categories are represented as well as a few fish-tail bases. There are also as many large triangular or ovate-triangular bladed points as there are small stemless triangulars. In addition to the points, scrapers, knives, and drills were found in some of the sites. A ground stone plummet was found in the Safety Harbour burial mound and shell plummets came from some of the Parish mounds. Besides plummets, conch shells were utilized to make cups, beads, celts, and picks. These latter two are made from the *Busycon contrarium*.

Artifacts of European provenience, or at least derived from European sources if reworked aboriginally, came from all four mounds. Iron tools, silver, olive jars, and clay pipes were found in the upper part of the Safety Harbour mound while glass beads, copper, gold, silver, iron, bone combs, and olive jar sherds were taken from the Parrish mounds. Parrish 3 showed least in the way of European material, and the few objects from this mound were found superficially.

Safety Harbour culture apparently centers in the Tampa Bay section of the Gulf Coast. Its southern extension may be as far south as the Caloosahatchee; at least ceramics of the type have been reported in that district. It seems likely that there is a northward continuation of Safety Harbour from Tampa Bay along the coast. Just where it separates from or merges with the late period of the north, Ft. Walton (Willey and Woodbury, 1942, Fig. 26, pp. 244–6), is not clear. The time position of Safety Harbour is securely established as late. Its close affiliations with Ft. Walton and the consistent association of European trade objects in Safety Harbour mounds and village sites admits no other conclusion. At least in part, Safety Harbour may be even later than Ft. Walton. In northwest Florida some of the sites of the Ft. Walton period have shown European artifacts, but many have not. A still later culture period in the north has been tentatively defined for the region around Tallahassee. Hale Smith (personal communication) has termed this the Leon-Jefferson complex, and preliminary studies indicate that it dates from the late seventeenth and early eighteenth centuries. There are a good many parallels between Safety Harbour ceramics and Leon-Jefferson types—more, in fact, than exist between Ft. Walton and Safety Harbour. Leon-Jefferson is definitely a Spanish Mission-Indian culture; trade objects of European manufacture are commonplace. From these correlations an equation of Leon-Jefferson with Safety Harbour, certainly the latter half of Safety Harbour, is the logical reconstruction.

GLADES CULTURE

There are three sites or site components which are clearly not recognizable as part of the Gulf Coast tradition. The affiliations of these sites are with the culture of the Glades area (Goggin, 1939, 1940, 1944). These are the Perico Island site near Bradentown (Stirling, 1935, pp. 376–8), Cockroach Key[9] just off the delta of the Little Manatee River, and the pre-mound level at the Weeden Island burial mound site in Tampa Bay.

All three of these sites are on islands or near-islands off the marshy shore. All were habitation places, and all were burial places. At Weeden Island, the pre-mound level was an old midden and cemetery. Perico consists of several shell middens, a cemetery, and a burial mound. Cockroach Key is a giant midden with

[7] See Moore, 1905, p. 303, Figs. 2–5.

[8] See also Plate XIX, c and p. 207 in this issue. *Editor.*

[9] Moore (1900, pp. 359–63) excavated at this site which he called "Indian Hill."

a burial mound located on one part of it. At both Perico and Cockroach Key the burial mound was made of shell and general village refuse rather than clean sand. In the Perico burial mound 185 primary flexed burials were recovered. There was no other burial type. At Cockroach over 200 burials were taken from the mound. Most of these were primary and flexed although there were a few secondary bundle burials. The Cockroach Key burial mound was built in two stages, and although stratigraphic observations were not recorded on burial types it is very probable that the secondary interments belonged to the latter level of mound construction. In neither mound was there a mortuary deposit of pottery nor were there individual burial offerings of any sort.

At Perico, a number of primary flexed burials were also found in what was designated as the cemetery area. This was in flat ground near but separate from the burial mound. These burials were unaccompanied with grave artifacts, but they were characteristically placed in small, shell-lined pits. The situation is paralleled by the findings at Weeden Island in the pre-mound level. Here, the burials were primary and flexed and had been interred in shell-lined pits.

At Cockroach Key the pottery from beneath the artificially constructed layers of the burial mound was Glades Plain and Belle Glade Plain. No other types were recorded. This, apparently, accords with other excavations in the Cockroach midden. In the burial mound, however, both Biscayne Check Stamped and Pinellas Plain, the latter a Safety Harbour type, were present in addition to the Glades and Belle Glade Plain types. From the Weeden Island pre-mound deposit only a single complete bowl remains in the study collection. This is a typical specimen of Glades Plain (Fewkes, 1924, Pl. 21, c). According to Fewkes (1924, pp. 11–13, and Stirling, personal communication, July, 1947) the pottery from the pre-mound level was all of this simple, crude sort. A great many sherds were taken from the Perico Island burial mound. These were sherds from the refuse fill of which the mound was built and cannot be considered as mortuary offerings. Nearly all of them were of the coarse, plain, sand-tempered type, Glades Plain. In the collection were two sherds of the type Deptford Bold Check Stamped, one of which was a tetrapodal support fragment, and a single piece of complicated stamped pottery closely resembling the northwest Florida type, St. Andrews Complicated Stamped. No pottery was found in the Perico cemetery, but in the Perico shell midden sherds were abundant. The large collection from the midden, over 550 sherds, was made up of slightly less than half Glades Plain and slightly over half of a newly defined type which I have called Perico Plain. Perico Plain is a grey-black ware, well-smoothed, and better made than Glades Plain. It is distinguished by its tempering material of large particles of limestone. In addition to the plain type, two decorated types, Perico Incised (Pl. XX, *o*) and Perico Linear-Punctated (Pl. XX, *n* and *p*), also occurred in small amounts in the midden. Most surprising of all, 15 sherds of fiber-tempered pottery were also in the midden collection. As found at Perico, this fiber-tempered ware is virtually identical with the type St. Simons Plain (Caldwell and McCann, 1941, pp. 50–1) or Stallings Plain (Griffin, 1943, pp. 159–60) of the Georgia coast. St. Simons Plain has also been reported from northwest Florida (Willey and Woodbury, 1942, p. 241) where it occupies the earliest sequence position of any ware. Similarly, the Perico Island fiber-tempered sherds bear a very close resemblance to the Orange Series pottery of the St. Johns River district. Lamentably, there are no data for stratigraphy in the Perico shell midden excavations. The relative chronological positions of the Perico series and the Glades Plain type cannot be incontrovertibly established.

Non-ceramic artifacts from the midden refuse at both Perico Island and Cockroach Key include shell tools or weapons such as conch shell hammers or picks, shell celts of the *Strombus* and *Busycon* varieties, shell plummets and beads, bi-pointed bone projectiles, bone daggers, and bone awls. Some of these types, quite characteristic of Glades culture, also came from the pre-mound level at Weeden Island.

From this brief survey of three sites, it can be seen that Glades culture, as it manifests itself in the Manatee region, has both an underlying consistency and specific differences. The former seems to predominate. The most common treatment of the dead was primary inhumation, usually in a flexed position. This was either in shell-lined cemetery pits or in mounds. The burial mounds are made of village refuse and they contain no mortuary artifacts. Grave goods are also absent in the cemeteries. An exception to primary interment was observed

in a minor percentage of cases in the Cockroach Key mound. Although it cannot be proven, I offer the surmise that the secondary burials in that burial mound were relatively late inhumations in the history of the mound. In this connection, it will be remembered that all the Safety Harbour and Biscayne sherds from this mound were found only in its upper level. In the midden under the mound only Glades complex types were recovered.

Glades Plain is the common dominant ceramic type of the Glades culture. Belle Glade Plain is also numerically important. Both of these types appear to have a long life span. The mound, it is admitted that this cross-dating is not iron-clad; but in the absence of any Weeden Island or later types in either mound or midden it is reasonably safe to assume that the Glades culture at Perico was earlier than the Weeden Island culture in this same general region. As such, a Deptford or Santa Rosa-Swift Creek correlation would be approximately correct. Whether the fiber-tempered ware preceded the sand-tempered Glades types or was contemporaneous with their early beginnings is a future problem for stratigraphic study in the Manatee region.

As for later continuations of Glades culture,

TABLE 12. CORRELATION OF RELATIVE CULTURE SEQUENCES

Estimated Dates	*Northwest Florida*	*Central Gulf Coast*	*Manatee Region*	*Glades Area*
1700 A.D. 1600	Leon-Jefferson Ft. Walton	Safety Harbour Crystal River	Safety Harbour Englewood	Glades III
1500 A.D. 1400 1300	Weeden Island II	Weeden Island	Weeden Island	Glades III
1200 1100 1000	Weeden Island I			Glades II
900 A.D. 800	Santa Rosa-Swift Creek		Perico Island	Glades I
700	Deptford			

shell tools and bone artifacts are characteristic and also must have a history as long, if not longer, than the Glades pottery complex.

The dating of the Glades culture demonstrates very clearly that there are several sequential phases, as Goggin has pointed out (Goggin, N.D.). The pre-mound level at Weeden Island obviously antedates the Weeden Island culture in that locality. At Perico, the association of the Deptford and the early complicated stamped sherd are evidence for equating the Glades culture with the Deptford and Santa Rosa-Swift Creek periods of northwest Florida. The fiber-tempered pottery in the midden of the same site may indicate that some of the Glades types were coeval with the fiber-tempered horizon of the Eastern Archaic. Lacking stratigraphy in the midden, and acknowledging the possibility of a fortuitous association of sherds in the fill of the burial the mound at Cockroach Key, at least in its upper level, offers some proof for this. Biscayne Check Stamped and Pinellas Plain at this site are clues to the contemporaneity of Glades culture with Weeden Island and, possibly, with Safety Harbour. It will be remembered that at Englewood and in the various Safety Harbour sites the Glades pottery types, such as Glades Plain and Belle Glade Plain, were fairly frequent. Similarly, Safety Harbour sites also showed shell tools reminiscent of Glades types. From this we can say in summary that the Glades complex was formulated sometime previous to the advent of Weeden Island into the Manatee region, that Glades culture continued coeval with Weeden Island in the same region, and that it may have also paralleled the Safety Harbour development. Whether or not it lasted this long as a separate cultural entity, we know that it had a very definite influence

upon the Safety Harbour culture in the Manatee region. Geographically, Glades culture relates to the whole Glades area of south Florida. We know that it extended up the Gulf Coast as far north as the Weeden Island site. Possibly, its diffusion was even more northerly.

SEQUENCE CORRELATIONS

The sequence alignments on the accompanying chart (Table 12) embrace four regions of Florida. (See also Willey and Woodbury, 1942, Fig. 26; and Goggin, 1947, Fig. 12.) These are the northwest coast, the central Gulf Coast, the Manatee region, and the Glades area. Of these regions, the evidence for relative chronology is most secure in the northwest and in the Glades, least secure for the central Gulf Coast, where it is largely extrapolated from what is known in the northwest and the Manatee region.

Beginning in the latest brackets, the Safety Harbour culture as it occurs in the Manatee region has been equated with both Ft. Walton and Leon-Jefferson from the northwestern part of the state. I am assuming, from ceramic typology and cross-ties and from the presence or absence of European trade goods, that Ft. Walton had an earlier inception than Safety Harbour and was, in part, responsible for its formulation. Safety Harbour then persisted later into the historic period. Englewood in the Manatee region is placed prior to Safety Harbour and even slightly earlier than Ft. Walton. Weeden Island is equated directly with Weeden Island I and II of the northwest. As yet there is insufficient evidence for subdividing Weeden Island on the central Gulf Coast and in the Manatee region as we have done for the northwest coast. Possibly, if the centers for Weeden Island are chiefly northwestern, only Weeden Island II or its equivalent is present in the south. This would tend to bring upward the lower ranges of the sequences for the central Gulf Coast-Manatee section. Perico Island is put as pre-Weeden Island on the basis of the St. Simons, Deptford, and early complicated stamped sherds. It may also have an upward extension in time bringing it into partial contemporaneity with Weeden Island. Perico Island is essentially a Glades cultural manifestation, and because most of the pottery is plain I have considered it as Glades I period. The few incised and linear-punctated pieces of the Perico ware series may be somewhat later, and, possibly, they equate with Glades II, the period marking the first appearance of incised pottery into the Glades ceramic tradition. The premound level at Weeden Island is presumably a part of the Perico Island period, and the bulk of the midden at the Cockroach Key site can also be considered as fitting in here. It has been mentioned that Glades occupation or influence continued later, paralleling Weeden Island and even Safety Harbour.

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PRESERVATION OF THE KUAUA MURAL PAINTINGS

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BECAUSE of the interest in the mural paintings from Kuaua pueblo, it is felt advisable to present a complete report on the field and laboratory processing of these.[1] Although two articles were published in *El Palacio* in 1935 and 1936 on the removing and processing of the murals, the detailed procedure has not been published as a unit in a scientific report. The processing of the Kuaua murals had no precedent to follow. As it is possible that similar finds will occur in future excavations, the processes developed for coping with the problem at Kuaua may be of aid. These processes may be varied to meet conditions involving other types of paintings.

The Kuaua ruins, now known as the Coronado State Monument, are situated on the western side of the Rio Grande two air miles northwest of the business section of Bernalillo, New Mexico. They lie in the Tiguex province of the central Rio Grande.

Paintings, probably of the type found at Kuaua, are mentioned in early Spanish accounts. Villagrá reported paintings at the first pueblo which the Spaniards with Oñate encountered in 1598 as they moved northward up the Rio Grande from Mexico. "On the walls of the rooms where we were quartered were many paintings of the demons they worship as gods. Fierce and terrible were their features" (Villagrá, 1933, p. 140). These paintings would probably have been at one of the Piro pueblos, 120 miles south of Kuaua. Speaking of the Piro pueblos and the place where these paintings were probably observed, Espinosa says, "The first settlement of the Piro, the most southerly group of pueblos on the Rio Grande, was Trenaquel, on the west bank of the stream, at or near the present San Marcial. The most southerly Piro pueblo on the opposite bank was Qualaçú" (Villagrá, 1933, p. 145, note 3).

Villagrá records other paintings which were seen at Puaray, " . . . we were able clearly to see through the whitewash, paintings of scenes which made our blood run cold" (Villagrá, 1933, p. 142). Neither of the sites recorded by Villagrá has been excavated. No historical account that refers to the paintings found at Kuaua has ever been brought to the author's attention. Early Spanish accounts and a number of early maps, some of which are listed with the bibliography, present evidence to show that Puaray was across the river and several miles south of Kuaua and Culiacán. The writer spent considerable time during two years of work on the Kuaua murals attempting to determine whether or not these could possibly be the pictures recorded by Villagrá. My own library and field research satisfies me that neither Kuaua nor Culiacán could possibly be the historic site of Puaray. My conclusions were that Site 11 of Fisher's survey was probably Puaray (Fisher, 1931, Site 11). These conclusions were based upon the deep stratigraphy of the refuse

[1] The author was in direct charge of the field and laboratory work on the murals and was responsible for the development and application of the techniques described.

area, a range of pottery types from prehistoric into historic, horse bones buried two feet deep in the refuse, the size of the site, and its close correspondence to the location indicated by historic documents and map research. However, other sites near Site 11 could still receive attention. One of these is Site 13 of Fisher's survey which was thought to be Puaray by Vivian (Vivian, 1932, pp. 61–3; Fisher, 1931, Site 13) and another is Site 10 which was postulated as Puaray by Hackett (Hackett, 1914–15, pp. 381–91; Fisher, 1931, Site 10).

Although the exact location of Puaray can probably be determined only by excavation, the evidence shows that if the paintings recorded by Villagrá were preserved, they are yet to be discovered. Of the paintings at Puaray, Villagrá also says, "There, pictured upon the wall, we saw the details of the martyrdom of those saintly men, Fray Agustín, Fray Juan, and Fray Francisco. The paintings showed us exactly how they had met their death, stoned and beaten by the savage Indians" (Villagrá, 1933, p. 142). This is additional evidence that the Puaray paintings are yet to be discovered as none of the Kuaua paintings depicted three Spaniards being stoned and beaten to death by Indians. It is probable that other, unrecorded, paintings may exist. Other paintings have been found in the Southwest by Brew at Awotovi, by Haury at Cañyon Creek, by Morris at Aztec, and by Tichy at Otowi (Brew, 1941; Haury, 1934; Morris, 1928; Tichy, 1947).

It was decided in 1934 to excavate two central Rio Grande ruins of the Tiguex province. In March, work was started on Culiacán, a ruin which was mistakenly identified by Bandelier as Puaray (Vivian, 1932, pp. 61–3; Meacham, 1926, p. 277; Hackett 1914–15, pp. 381–91). In June, work commenced on Kuaua which was identified by Meacham as the La Palma pueblo of the Rodriguez expedition in 1581 (Meacham, 1926, p. 277; Fisher, 1931, Site 20). The excavation was sponsored by the University of New Mexico and the School of American Research and used federal relief labor. Dr. Edgar L. Hewett, head of the Department of Anthropology at the University and Director of the School of American Research, was in general charge of the work. Gordon Vivian was field supervisor on the excavations.

The mural paintings at Kuaua were discovered in mid-February, 1935. Discovery was made when an F.E.R.A. workman uncovered a bit of painted adobe while a test was being made in the southern plaza of the pueblo. Work was stopped immediately where the painted adobe had been found and, after careful examination of the place, Vivian turned over the job of clearing away the fill to student assistants. Further excavation revealed that the painting had come from a subterranean kiva wall.

The main wall of the kiva, about sixteen inches thick, was made of irregular dried adobe balls set in adobe mortar. Irregular adobe balls mortared together were found and photographed during the work on the kiva. This confirmed an account on house construction given by the Spaniards with Coronado, as Castañeda says of the Tiguex pueblos, "They gather a great pile of twigs of thyme and sedge grass and set it afire, and when it is half coals and ashes they throw a quantity of dirt and water on it and mix it all together. They make round balls of this, which they use instead of stones after they are dry, fixing them with the same mixture, which comes to be stiff like clay" (Castañeda, 1896, p. 520).

Adhering to the adobe wall of the kiva was a laminated layer almost two inches thick. The laminations consisted of thin adobe washes which averaged about one-thirtieth of an inch in thickness. Where the layers had been eroded it was possible to see that some had been painted. Seven painted layers could be counted at that time. When work had been completed in the laboratory more than two years later, the total number of painted layers was found to be 17 out of a total of 85. From one to five sterile layers were found between successive painted layers. These sterile layers were adobe washes placed over a painting to obliterate it so that the kiva walls could be redecorated. In this way the older paintings were preserved as old wall paper is preserved when new paper is placed over it.

The kiva was completely excavated. The north, west, and south mural layers were fairly well preserved except where erosion had destroyed the top of the layers and the eastern ends of the layers on the north and south walls. The murals on the east wall were represented only by a badly checked and eroded fragment, the rest having been destroyed by erosion. Painted layers were found also on one end of the altar or deflector.

In the center of the west wall was a niche approximately three inches high, eight inches wide, and a foot deep. This niche contained

a naturally formed stone pipe, an especially fine projectile point, some bits of turquoise and other stone, and some vegetable matter which was too badly decomposed to be identified. The nature of the find indicated that these may have been objects used in ceremonies. Subsequent work showed that this niche was the center or focal point of the paintings. For example, the first painting on the west wall showed two prone figures with large headdresses on either side of the niche. The head of each figure was pointed toward the niche.

To prevent the laminations from splitting apart, thick white shellac was applied along the top edges of the painted layers. The first painted layers were exposed on the north and west walls by carefully scraping away the sterile layers over them with flexible palette knives. The original plan was to leave the paintings *in situ* and work on them in the field. This was found to be inadvisable as temperature and humidity could not be controlled to prevent the layers from splitting apart. However, the immediate cause for moving the mural walls to the University was the discovery that sand had seeped between the painted layers and the kiva walls behind them. There was thus no solid bond between these layers and the kiva walls. It was feared that they might fall inward and be irretrievably lost.

The mural layers on the north, west, and south walls were jacketed as a unit and sawed apart at the corners while the east wall fragment and the deflector were jacketed separately. Before jacketing, the outer surfaces were treated, the face of the sterile layers with an application of white shellac and the painted areas by spraying with a thin solution of celluloid dissolved in acetone.

The front of the mural walls was jacketed in sections four feet wide going the full height of the painted layers. This was to facilitate removal of the front jacket in the laboratory as heavy layers of tissue were placed at the juncture of the sections so that they might be sawed apart without injuring the painted layers beneath. Strips of tissue paper were hung against the wall and were tamped on with a wet brush until they adhered to it. In this manner three layers of tissue were applied. Undercut and broken segments in the wall were packed with wet tissue. While the tissue was still wet, a thin solution of molding plaster was flipped on it until it was completely covered. Immediately, strips of burlap soaked in plaster were applied on top of the plaster layer and moulded on the wall by hand. Three of these burlap layers were applied. Then laths were laid against the wall at six inch intervals and were bound on with plaster soaked burlap strips. A section at a time, this process was repeated until the face of the murals had been completely jacketed (Fig. 43).

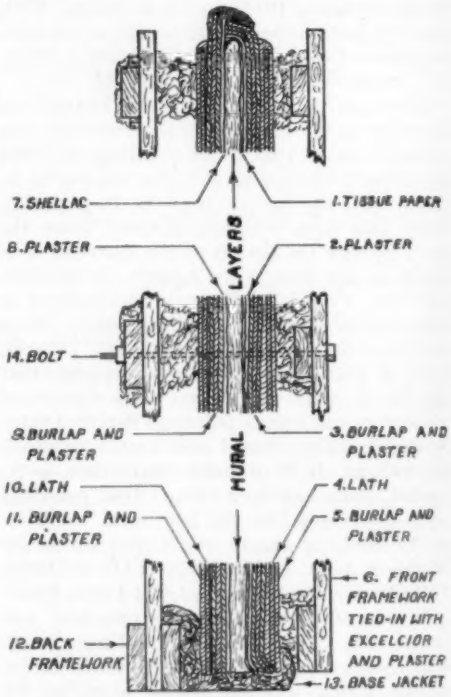

FIG. 43. Cross section of the Kuaua mural jackets. Numbers indicate order of processing.

A wooden framework of one and two inch timbers was made to fit the face of each wall. These were set against the jacketed walls. Each framework was bound to its respective wall by balls of excelsior and burlap strips soaked in plaster. These bonds were placed at intervals sufficiently close to give a solid bond between the framework and the jacket. With the frameworks bonded to the jackets, work on the face of the murals was completed.

It was desirable that the back jacket should be the backing for the mural layers during the laboratory processing. To jacket the back of the painted layers, a trench was dug behind the kiva walls. The kiva wall was then cut down

Murals in the laboratory showing stages of processing. *Extreme left*, paintings being transferred to wall board; *upper left*, full scale copy of first painting on west wall; *central left*, west wall mural layers with niche in center; *left rear*, full scale canvas copy of a figure; *right rear*, transferral on wall board; *right*, mural layers from north and south walls.

Processing the Kuaua murals. *Upper left*, Mr. and Mrs. Frank Palmer making the full scale, color copies on canvas; *upper right*, applying cellulose solutions to a painting before stripping; *lower left*, applying casein-adobe solution to the back of a muslin stripped painting; *lower right*, making small annotated copies on graph paper to accompany detailed notes.

until about a foot of the back side of the mural layers was exposed along the full length of a wall. This exposed section along the upper side of the murals was shellacked. Plaster and burlap strips soaked in plaster were applied directly to the shellacked surface. As a solid bond was wanted here, no paper was used. After the exposed upper section had been jacketed, the kiva wall was cut down another foot or more and the jacketing process was repeated. The process was continued until the entire back of the painted layers was encased. Lath at six inch intervals was used to reenforce the jacket. Wooden frameworks were made for the back jackets and were bonded to them with plaster soaked excelsior and burlap. To facilitate jacketing the base of the murals, the base of the back framework was set two inches lower than the base of the front framework (Fig. 43).

To jacket the base of the murals, a two-foot long section was cut from under them and the jackets. Greased planks were placed horizontally under the base of the back framework which left a two inch space below the base of the front framework. Plaster-soaked burlap strips were forced into the space and under the jackets forming a bond between the front and the back jackets. A section at a time, this process was repeated until the base of the murals had been jacketed (Fig. 43).

To hold the back and front frameworks together and to prevent any tendency for the front and back jackets to spread apart during moving, three bolts were placed through the west wall, two through the north wall, and one through the south wall.

The jacketed walls were sawed apart at the corners and the corners jacketed. The west wall was 18 feet long, the south wall 14, and the north wall 16. The eroded fragment of the east wall, and the altar or deflector, which also had painted layers on it, were jacketed as individual units.

A sloping ramp was excavated into the kiva. A second ramp was dug at the top of this at such an angle that when a truck was backed into this, the truck bed formed a continuation of the ramp out of the kiva. A heavy plank cradle was placed under each wall in turn, rollers were placed under the cradle, and the wall was rolled up the ramp and on the truck in an upright position. The aggregate weight of the mural layers in the jackets was a little less than five tons. The west wall was so long and heavy that sand bags had to be placed on the front fenders of the truck so that it could be driven to the University.

In the fall of 1935, Dr. Donald D. Brand became acting head of the Department of Anthropology at the University of New Mexico, the institution that sponsored the laboratory processing of the murals. Later, a grant was given jointly by Arthur N. and Eleanor Pack which made it possible to obtain necessary materials and aid beyond that available under the W.P.A. laboratory project which was started in December, 1935. In the laboratory the murals were propped against a support, tilted backward at a slight angle, and the front jackets removed (Pl. XXI). The mural layers were found to be intact; no damage had been caused by their jacketing or moving.

A process was devised for stripping the original paintings from the walls and remounting them on hard wallboard. At first this process was rather complex, involving the use of several different solutions; but eventually it was reduced to a rather simple technique which gave equally satisfactory results. The process given here is the simplified one.

When a painting had been exposed, by scraping away the sterile layers overlying it, a full-scale copy in color was reproduced on canvas (Pl. XXII, *upper left*). A small-scale copy was also made on graph paper, to accompany the detailed notes (Pl. XXII, *lower right*). Five known colors had been used in making the murals. These were red, yellow, black, white, and green. Green was found on the altar and although it was found on some wall paintings, it was used sparingly. Another color had been used that could not be determined, but it was represented by a brownish stain. This color, used in depicting corn stalks and leaves on some paintings, was probably a green vegetable pigment which had decomposed into a brown powder. Analysis of this powder showed it to be of vegetable origin, but that it was originally green in color can only be surmised from the manner in which it was used to depict those things which are normally green in nature. However, its original color being uncertain, it was reproduced on the color copies as a brownish stain.

After the painting on the wall had been photographed, it was ready for stripping (Pl. XXII, *upper right*). A solution was made of one quart of Eastman stripping collodian mixed with six ounces of clear Ambroid and (or) Duco cement. These proportions were

varied at times to meet special conditions, but they remained as given for most of the processing. This solution was applied to the painting with a brush. Unbleached muslin with the sizing removed was immediately pressed on the painting and spread taut to avoid wrinkles. More of the solution was applied to the muslin until it clung evenly and tightly to the painting. It was then allowed to set from 15 to 20 minutes. This gave sufficient time for the hardening of the adhesive solution on the outer surface but left the inner application pliable below the painting. The muslin was then stripped from the wall by peeling it off with a rolling motion. The painting adhered to the muslin.

To give body to the paper-thin painting and for better adherence, a solution of adobe mixed with casein sizing was applied to the back of the painting on the muslin (Pl. XXII, *lower left*). When this solution had dried, clear Ambroid was applied to it and the painting was glued on a hard wallboard. This wallboard had been previously treated with an application of the adobe and casein sizing solution to form a natural background. When the Ambroid had set, the muslin was removed by rolling it back sharply upon itself. With the muslin removed the painting was exposed, mounted solidly on the wallboard. As accurately as possible, all paintings from a single painted layer were mounted on the wallboard in the same relative position to each other as they had occurred originally.

When one painted layer had been stripped, the next painted layer was exposed with palette knives by scraping and peeling away the sterile layers covering it. The process of copying and stripping was then repeated on the exposed paintings.

It was thought that the inner layers would probably be in a better state of preservation than the outer layers. However, this was not true, as the innermost layers had only occasional fragments of paintings preserved on them. The reason for this was not evident, but it is possible that these may have been remnants from a set of old mural layers that had been largely destroyed before new layers were placed over them. A hint of this was found when excavations were made to jacket the base of the mural layers. At one point near the floor level of the kiva was a remnant of an older set of laminated layers a trifle thicker than those which were preserved. As the floor of the kiva had been blackened with each new wall decoration, it was surmised that a large proportion of the layers in this stump of an older laminated wall had also been decorated.

It is possible that an understanding of the numerous and varied paintings from Kuaua may lead to an interpretation of some of the other paintings, pictographs, and petroglyphs of the Southwest and adjacent areas.

In conclusion the writer wishes to thank those whose active interest and aid made possible the preservation of the mural paintings from Kuaua: for his assistance at critical periods, J. Charles Kelley; for their active participation in the field processing, Gordon Vivian, Ele Baker, Robert Coffin, Gordon Page, and William Chauvenet; for their accurate color reproductions and aid in the laboratory, Mr. and Mrs. Frank Palmer, Vance Davis, Robert Lister, and Paul Goodbear; and for his aid in securing the Pack grant, Frank C. Hibben.

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Some of a number of early maps showing the location of Puaray:

Etats-Unis de l'Amerique Septentrionale, avec, les Isles Royale, de Terre Neuve de St. Jean, l'Acadie, etc., 1785. (Supplement a l'atlas de M. Robert de Vaugondi.)

Carte des invirons du Mississippi, Par G. de l'Isle, Georgr., 1701.

Accurata delineatio celeberrima regionis Ludovicians Del Gallico Louisiane, Matthaei Scutteri, Chalcog, Augustan (date?).

An accurate map of North American . . . British and Spanish dominions on this great continent; according to the definitive treaty—concluded at Paris 10th February, 1763 . . . Eman Bowen, Geog. to His Majesty, and John Gibson, engraver.

Carte de la Nouvelle France, ou de voit le cours des grandes rivieres S. Laurens & de Mississippi aujour d'hui S. Louis (date?).

River Basin Surveys
Love Memorial Library
Lincoln, Nebraska
May, 1947

MARCEY CREEK SITE: AN EARLY MANIFESTATION IN THE POTOMAC VALLEY

CARL MANSON

INTRODUCTION

WHEN William Henry Holmes of the U. S. National Museum explored the Potomac River Valley in 1890, he studied and described most of the major village sites and cultures to be found in the area known as "Tidewater."[1] The Marcey Creek site is located at the head of Tidewater, overlooking the Little Falls of the Potomac, but was not reported by Holmes. It is on the right bank of the Potomac River, in Arlington County, Virginia, opposite Washington, D. C. The site covers less than one-fourth of an acre near the crest of a precipitous hill, 170 feet above river level. During the aboriginal occupation water was obtained from a small spring, now dry, which flowed into Marcey Creek, about 100 yards from where that stream cascades over a falls into the Potomac. The site is well situated for defense and affords a commanding view of the river.

ARCHAEOLOGICAL HISTORY

The Fall Line divides the Potomac Valley into two fairly distinct cultural areas. The Potomac River below the Fall Line, with its tributaries east and southeast of Washington, is historically Algonkian. The Potomac River immediately to the northwest of the Fall Line is supposed to have been peopled by Siouan elements, but this assignment has not been definitely supported archaeologically. Research in the Potomac Valley has not progressed much further than these divisions, although recent work by a number of investigators indicate a greater complexity than was heretofore anticipated.

Several sites on the upper Potomac River have been excavated by Hugh Stabler and Richard Slattery, working under the direction of members of the U. S. National Museum staff. Slattery found and described artifacts comparable to the Marcey Creek material at a site in Montgomery County, Maryland.[2] Richard Stearns salvaged valuable material and data from commercial diggers at the Hughes

[1] Holmes, 1903.

[2] Slattery, 1946.

site and prepared an excellent report.[3] The closest affinities of the latter site seem to be to the west, where sites in the Shenandoah Valley,[4] Virginia and the Youghiogheny Valley[5] in Pennsylvania have produced cultural material showing Upper Mississippi traits imposed on a "Woodland" pattern, and are considered "late" prehistoric. A few sites in the upper Potomac area exhibit relationships with the Tidewater area, yet are sufficiently different to be classed apart from known Algonkian sites. In general, the important cultural traits at most of these Piedmont sites include single, flexed burials; triangular arrowpoints; lugged, shell-tempered pottery; and discoidals.

Several large sites have been excavated in the lower Potomac River area during the last decade. The two most important were historic Algonkian villages: one at Patowomeke (1608–76) in Stafford County, Virginia;[6] the other at Moyoane (1608–23) in Prince George County, Maryland.[7] The principal cultural traits of the historic and protohistoric Algonkian sites of the lower Potomac include ossuary or group burial, grit-tempered pottery, stemmed projectile points, and stockaded villages.

EXCAVATION

Excavation was preceded by the establishment of a bench mark and datum plane. The site was divided into five-foot squares, and each square was shoveled and troweled through, records being maintained of every feature. Depth from surface of each artifact was recorded as it was found. It was apparent almost at once that the level of fourteen inches divided ceramic and non-ceramic zones. This situation was observed throughout the excavation except where pits dug in the upper stratum penetrated the lower.

The site had been farmed for many years, and the topsoil was consistently ten inches deep. The first stratum, selected because of the ceramic content, included the topsoil and the first four inches of a disturbed zone, and was composed of brown, sandy soil that contained both natural and fire-cracked pebbles of granite, quartz, and quartzite. Grit- and steatite-tempered pottery and stone artifacts, including steatite pot fragments and chipped projectile points, were found in this layer. No trace of bone or other organic remains were encountered. Beneath the top 14 inches and extending to a depth of 23 inches was a layer of dark brown soil more clay-like than the first, which merged imperceptibly into the undisturbed hardpan. This layer contained chipped stone artifacts, work in polished stone, steatite sherds, steatite rejects, quartz pebbles, fire-cracked stones, and flecks of charcoal. No pottery or organic refuse was present. Hardpan was a yellowish clay containing natural pebbles of quartzite, disintegrated granite, and schistose rocks.

Three pits, two feet in diameter and extending to hardpan, were found. These were hemispherical and were filled with fine gravel such as that found sorted in creek bottoms. The artifacts found in the pits were comparable to those from the upper stratum. A single post-mold was found in association with each pit. Each was two inches across and extended to a depth of three inches into hardpan.

ARTIFACTS

All artifacts were made of stone or clay. Bone, shell, or other materials, if used, have not survived. Their complete absence could indicate an acid condition of the soil which would not favor the preservation of calcareous materials. Without exception the stone implements show traces of patina, and many of the sherds disintegrated at exposure. Pipes or pipe fragments were not found.

The lithic materials are all native to the Potomac Valley and may be found along the shores of the river as well as in the Pleistocene gravel deposits that outcrop in this region. The clay used in pottery-making could have been obtained near the site. The abundance of steatite both as refuse and as ceramic temper indicate an immediate local source as well. Steatite quarries in the adjoining county of Fairfax and the District of Columbia[8] have been described and are well known. A majority of the steatite found at Marcey Creek is of a uniform bluish-green color and is evenly grained.

Occasional unworked pieces of impure, grainy ochre were discovered while digging. Hematite was the more abundant, although limonitic varieties were also found. This material is also local.

[3] Stearns, 1940.
[4] Manson, MacCord, and Griffin, 1944.
[5] Butler, 1938.
[6] Stewart, 1938.
[7] Ferguson, 1937.
[8] Holmes, 1897.

Over one hundred chipped stone artifacts were found. Of these, 40 per cent were stemmed projectile points, while the rest were unspecialized forms or rejects (Pl. XXIII). The physical properties of the stone used contributed to the crudeness and mediocrity of the points, which ranged from one to four inches in length. There is but little difference between the stone implements of the two levels although those from the lower level tend to be heavier and cruder. Seventy per cent of the total forms are of quartzite, seventeen per cent of rhyolite, and the balance of quartz. The Marcey Creek projectiles are similar to those found at the Pope's Creek shell heap,[9] the prehistoric Piney Branch quarries in Rock Creek Park, Washington, D. C.,[10] and at numerous non-pottery camp sites in the lower Potomac Valley. They are also comparable to those found on the Seldon Island site.[11] In addition they have a wide distribution over most of the Middle Atlantic coastal plain.

Polished stone artifacts include the fragment of a blue slate bannerstone (Pl. XXIII, A, *top center*) and a crude grooved ax, (Pl. XXIII, A, *top left*) found on the surface of the site. Two adjoining fragments of the blade of an ax or celt were found 30 feet apart in the lower level, one at a depth of 1.6 feet and the other at 1.5 feet (Pl. XXIII, B, *top left*).

CERAMIC COMPLEX

Marcey Creek Plain. The pottery from the Marcey Creek site is composed of two types, easily distinguished in form and tempering. The majority type, Marcey Creek Plain, comprising 62 per cent of the total sample of 1500 sherds, has been mentioned as occurring on scattered sites along the Atlantic Coast (Pl. XXIV, A). It is tempered with angular pieces of crushed steatite, with some pulverization evident in a few sherds. The aplastic constitutes a large proportion of the paste and gives the sherds a soapy feeling and a softness not otherwise a property of clay. The texture is predominantly coarse, the steatite particles ranging in size from a powder to pieces as large as 1 centimeter. Surface color ranges from dull grey, through buff and tan, to rose and reddish brown, with the reddish hues most numerous. Interior colors vary from light grey to rose and brown with the greys in the majority. Many of the sherds were unevenly fired and exhibit a mottled effect. No evidence of coiling is observable.

Both inner and outer surfaces are smooth from the lip to the base of the vessel. The basal sherds are heavy, and coarsely striated and unevenly finished on the exterior. The outer surfaces of three of them, less than 1 per cent of the total, show textile impressions. All of the basal sherds show the design of a coarsely woven mat on the exterior. One rim sherd is sharply and irregularly notched, but all others are plain. Four lugs or nodes, massive enough to be utilitarian as well as decorative, complete the artistic aspect of the ware.

In shape the ware strongly resembles the conventional pot carved from steatite, and is probably a direct copy of it. The vessels are oval with flat bottoms, and several have a pronounced heel at the joint between the side and base. The lips are fairly thin compared with the rest of the bowl, measuring 0.5 centimeters, and they expand rapidly to a body thickness averaging 5.0 centimeters at the base. The base, which joins the sides at an average angle of 120 degrees, is also heavy and thick. Usually a break occurs at the point where the sides and the base join.

The ceramic relationships of Marcey Creek Plain are still indefinite. Steatite sherds of an almost identical type were found on Seldon Island, Montgomery County, Maryland, 30 miles northwest of Marcey Creek.[12] The Seldon Island steatite-tempered series differed from Marcey Creek Plain in that the outer surfaces are textile-impressed.

Comparable pottery was obtained in the Salisbury, Goose Island, Woodbury Annex, and other sites in New Jersey, where it is considered prehistoric.[13] Marcey Creek Plain is also similar in certain respects, such as body shape, heel, and temper proportions, to the "Fayette Thick pottery which appears to be an early type in Kentucky and is in turn comparable in some ways to early types elsewhere."[14]

Marcey Creek Cord-Marked. The apparent affiliations of the dominant type found in the pottery-bearing strata at the Marcey Creek site are complicated by the relationships of the minority type found in the same strata.

[9] Holmes, 1907.
[10] Holmes, 1897.
[11] Slattery, 1946.
[12] Slattery, 1946.
[13] Cross, 1940.
[14] Webb, 1945.

This ware occurs at almost all village sites along the lower Potomac, as well as at many sites along the tidal portions of all rivers along the Middle Atlantic seaboard.

The paste of the minority type, Marcey Creek Cord-Marked (Pl. XXIV, B), is composed of local clays mixed with crushed lithic materials other than steatite. Crushed quartz was the aplastic in more general use, but mica, granite, and limestone were occasionally used. The texture of this ware ranges from fine to coarse, but is predominantly medium fine. A majority of the sherds have a surface hardness of 2.0 to 2.5. Exterior colors vary from grey to red brown, with light brown tints the more numerous. The interior surfaces are finely smoothed and exhibit colors similar to the exterior, though a trifle darker.

The exterior surfaces are cord-marked, showing either use of the cord-wrapped malleating paddle or the application of cords to the still aplastic clay to achieve the decorative effect. The cords used varied from fine to coarse and were usually applied obliquely from left to right. Net impressions were not found, but several sherds had impressions that suggest loosely woven basketry with both warp and woof formed of firm materials such as twigs and reeds.

Few decorative motives were used, although the rim occasionally received crude finger nail impressions and simple incising. The bowls were wide-mouthed pots with conical bases. Several of the Marcey Creek Cord-Marked sherds have small lugs attached to the rims, obviously for decoration, as they were too light to have supported a filled vessel. One of the rim sherds has a large lug that could have been utilitarian and suggests an affinity between the dominant and minority types of pottery. Other ceramic traits indicative of such relationships are lacking.

One disk, comparable to those widespread in the Rappahannock area, was discovered.[15] The disk was grit-tempered and has an indentation paralleling the edges.

SUMMARY AND CONCLUSIONS

The Marcey Creek site was a small village, occupied by a sedentary people for sufficient time to enable the soil to increase in thickness as much as 23 inches through sheetwash and decay of humus or other factor, there by burying cultural material and indicating cultural changes as evidenced by the addition of a pottery type. The lengths of time during which the site was occupied and since it was abandoned are unknown. The depth of the culture-bearing layers, the crudeness of the stone artifacts, the absence of organic material, and the complete absence of pipes indicates a greater antiquity for this site than for any other thus far excavated in the Potomac Valley.

[15] Bushnell, 1937.

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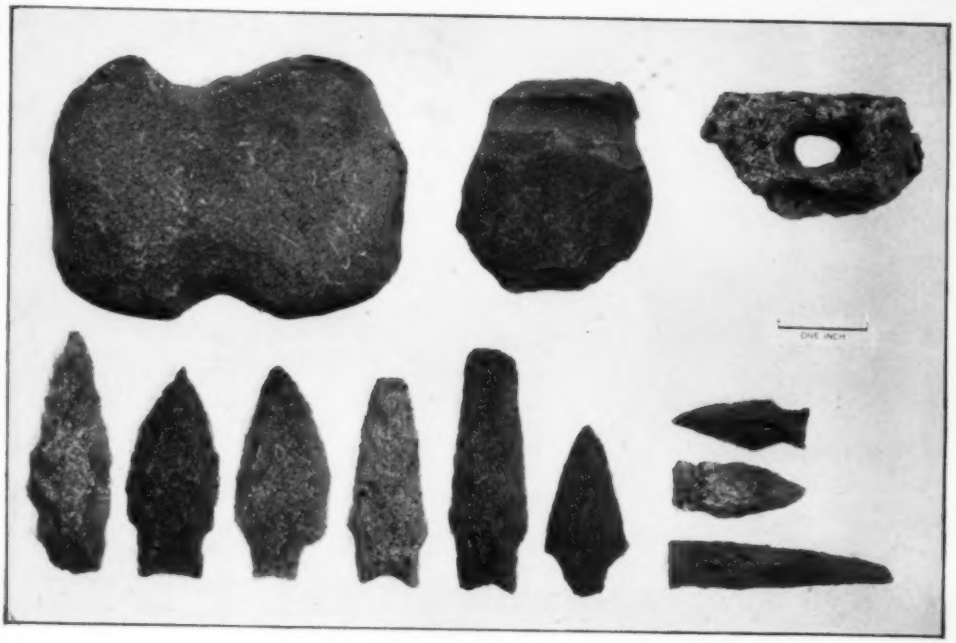

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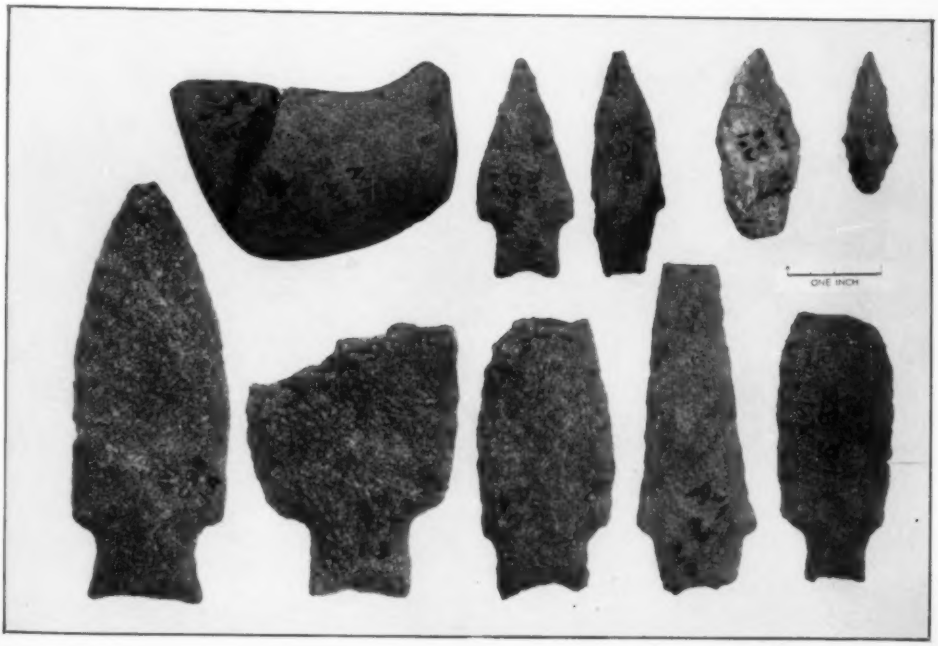
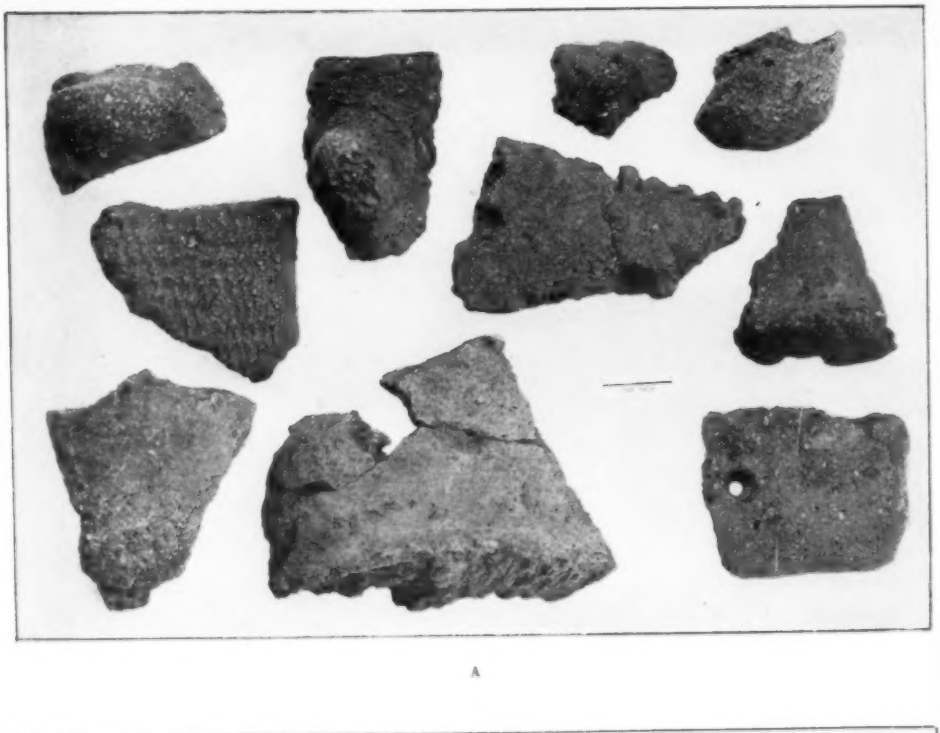


B

Artifacts from the Marcey Creek site, Virginia. A, stone artifacts from the upper level and surface; B, stone artifacts from the lower level. (Photographs by the U. S. National Museum.)



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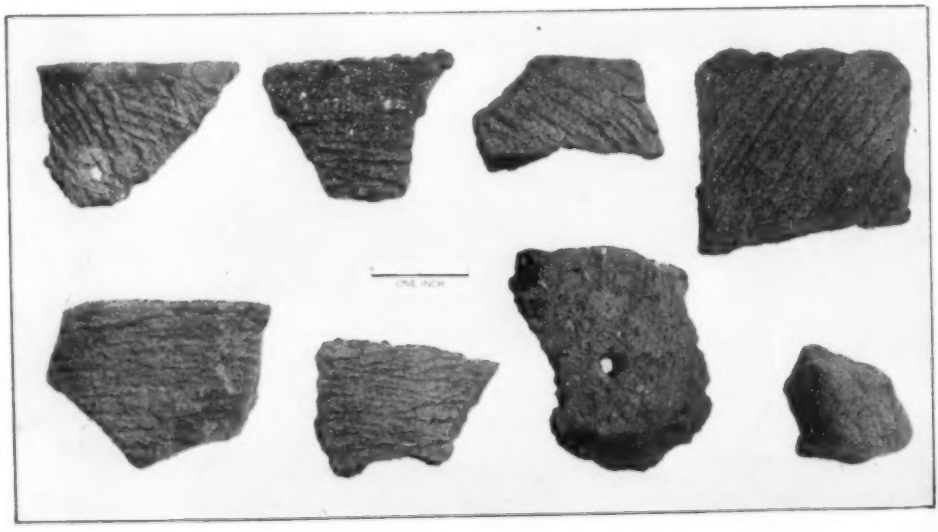

B

Potsherds from the Marcey Creek site, Virginia. A, Marcey Creek Plain; B, Marcey Creek Cord-Marked. (Photographs by the U. S. National Museum.)

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EVIDENCES OF PRE-POTTERY CULTURES IN LOUISIANA

C. H. WEBB

STUDIES of Louisiana's prehistory have been devoted largely to the pottery-making and mound-building cultures. The topography of the state is primarily responsible for this fact, since the delta lands of southern Louisiana and the wide, fertile river valleys of the northern part were particularly suitable for the agricultural peoples whose numerous sites have attracted attention. Witness to this fact is the long sequence of pottery-containing cultures (Tchefuncte, Marksville, Troyville, Coles Creek, Plaquemine, historic Natchez) delineated by Ford, Willey, and Quimby[1] in central and southern Louisiana, while the Red and Ouachita River valleys in the northern portion present another series of culture periods (Marksville, Coles Creek, Gahagan, Bossier, Belcher, Glendora) which culminate in the historic Caddo.[2]

Despite these facts, evidences of pre-pottery cultures are appearing in the state and these may be expected to increase as more careful investigations are pursued. This could be anticipated from the situation in surrounding states—the Edwards Plateau culture of central Texas,[3] the Ozark Bluff Dweller culture[4] of Arkansas and the several strata which underlie the pottery containing cultures in the Southeast, recently reviewed by Haag.[5]

In southern Louisiana, Ford and Quimby's recent monograph[6] presents the Tchefuncte culture as the product of a simple hunting, fishing, and gathering economy of the late Archaic, to which the beginnings of agriculture, pottery making, and mound building were added. Trait comparisons suggest three groupings of sites to the authors: a non-pottery burial site on Pecan Island; several shell middens in the coastal marshes around Lake Pontchartrain in which pottery vessels and clay pipes appear; and conical mound sites near Lafayette and on Lake Louis in central Louisiana. A certain number of basic traits related to the simple economy of the period, the use of the atlatl, styles of bone implements, and burial traits, interconnect the three groupings.

The non-pottery component is at Copell on Pecan Island, a burial site excavated by Collins[7] in 1926. Most of the artifacts were associated with flexed skeletons, some of which had been placed on layers of red and yellow pigment. Collins's study of 20 male and 13 female crania showed them to be undeformed, presenting no evidence of syphilis, and dolicocephalic in type.

On the basis of physical affinities, he suggested that these people should be regarded as the southernmost representatives of a once widespread type east of the Mississippi, a long and rather high-headed type (Neumann's Sylvid type) found in the earliest horizons in the Northeast, Kentucky, Tennessee, and north Alabama.

Stone objects with the Copell burials included chipped knives and large stemmed points, retouched flake scrapers, elliptical bar weight, and crude boatstone. Objects of bone and related materials included awls of deer bone and raccoon penis bone, socketed bone and antler projectile points, antler atlatl hook, perforated and unworked penis bones of raccoon and other animals, perforated dog teeth, drumfish teeth, worked and unworked jaws of various animals. Of shell materials there were tubular shell beads, clam shells filled with asphaltum, Busy-

[1] Ford and Willey, 1940; Ford and Quimby, 1945.
[2] C. H. Webb and Dodd, 1939; Walker, 1935; C. H. Webb, 1945.
[3] Sayles, 1935.
[4] Dellinger and Dickinson, 1942.
[5] Haag, 1942.
[6] Ford and Quimby, 1945.
[7] Collins, 1941.

con shell vessel, and inner whorls of conch shells.

The shell midden sites of the succeeding Tchefuncte period[8] showed elaboration of these shell and bone artifact types. Stone objects included eight types of large hafted projectile points, large stone drills, "turtle-back" core scrapers, leaf shaped blades, atlatl weights, grooved plummets, mortars, pitted stones and spheroid hammerstones, flat sandstone saws, quartz crystals, and two fragments of steatite vessels. The pottery complex covers a number of vessel types, numerous tubular clay pipes, and 32 fired clay balls. A fragmentary barrel-shaped stone bead was found at one of the mound sites. Cultural relationships with the southeastern Archaic cultures and with Adena were summarized by the authors.

In northeastern Louisiana, the large Poverty Point site in West Carroll Parish seems to be the center of a culture which is related to, but not identical with, Tchefuncte. Knowledge of the full content and distribution of this culture is limited by the lack of excavations at the type site and of adequate collections from similar sites in the area. The Poverty Point site covers several hundred acres on the west side of Bayou Maçon, a deserted channel of the Mississippi, and with the adjoining and apparently related Motley and Jackson sites, gives evidence of aboriginal habitation for an extent of about two miles along the stream. Mounds or earthworks are present on each of the three sites, the major group on the Jackson place. Around the latter mounds a moderate number of pottery sherds is found, classified by Ford as predominantly Marksville and Coles Creek.

As noted by Moore[9] and subsequent observers, however, the Poverty Point site exhibits a paucity of pottery sherds despite evidences of prolonged habitation. In 1935 we found a cache of more than 2500 steatite and sandstone fragments estimated to represent two to three hundred vessels. As indicated in our subsequent report,[10] Fisk and Russell identified the materials as igneous and sedimentary schists, suggesting the southern Appalachians as the probable source. Jones[11] has described steatite quarries in the Tallapoosa River region of northern Alabama; moreover, Webb and De Jarnette[12] found steatite and sandstone vessels with shell midden burials in the Pickwick and Guntersville Basin excavations. Steatite and sandstone sherds were found in the lower pottery-bearing levels of the Pickwick middens and well down into the pre-pottery levels.

This makes it more significant to note a number of correlations between other artifacts found at Poverty Point and in the Alabama shell middens (Lauderdale focus),[12] as well as Tchefuncte,[13] despite limitation of comparisons to artifacts of stone and clay. Four of the main projectile types (types 8, 6, 17, 7) of the Alabama middens, including long simple-haft and broad barbed-haft types, are found at Poverty Point (Fig. 44: 1–7) and three of these are similar to Tchefuncte types. Triangular, leaf-shaped, and "turtle-back" scrapers (Fig. 44: 15, 16, 14) are common to all three cultures, as are three drill types—large rectangular, large expanded base, and drills reworked from simple haft point (Fig. 44: 10, 9, 8). Atlatl weights (bannerstones and boatstones in Lauderdale, boatstones at Poverty Point, bar weights and boatstones in Tchefuncte), hammerstones, stone beads, and tubular pipes are other traits held in common. The pipes are made of clay in Tchefuncte, of stone in Lauderdale, of both clay and steatite (Fig. 44: 28, 29) at Poverty Point. Stone beads are rare in Tchefuncte, more numerous (both tubular and barrel shaped) in Lauderdale, and very numerous in Poverty Point, with tubular, barrel-shaped, rectangular, and bird effigy types (Fig. 44: 18–20, 22–24), in addition to beads made from crinoid stems (Fig. 44: 21). Although bannerstones have not been found in Tchefuncte or Poverty Point, a stone bead (Fig. 44: 22) from the latter site is a miniature bannerstone, indicating knowledge of the trait.

Other differences are noted. Lozenge-shaped projectile points are found at Poverty Point, but apparently not in Tchefuncte or Lauderdale. Grooved axes (Fig. 44: 13) and 2-holed gorgets (Fig. 44: 17) are not reported from Tchefuncte but are present in the other two. Quartz crystals and plummets have not been found in the Alabama middens, nor have the fired clay balls, found in small numbers in Tchefuncte sites, but in such enormous quantities at Proverty Point (Fig. 44: 31–34) as to indicate that this site was the center of their

[8] Ford and Quimby, 1945.
[9] Moore, 1913.
[10] C. H. Webb, 1944.
[11] Jones, 1939.
[12] W. S. Webb and De Jarnette, 1942.
[13] Ford and Quimby, 1945.

manufacture, as it also seems to have been for plummets of hematite and jasper beads. Plummets (Fig. 44: 25–27) from Poverty Point range from crude to finely made, both grooved and perforated, usually made from hematite, but occasionally from sandstone, steatite, and even fired clay. Tchefuncte plummets are crude and always grooved.

Griffin[14] has identified one pottery sherd from the Jackson place, adjoining Poverty Point, as cord-marked, a second as probably Tchefuncte, and a third as belonging to the Alexander series. The fact that the remaining identifiable sherds are of Marksville and Coles Creek types suggests a situation comparable to that of southern and central Louisiana, where Tchefuncte is followed by the Marksville-Troyville-Coles Creek sequence of burial and temple mound cultures. Other artifacts than pottery typical of the Marskville and Coles Creek periods are found at the Poverty Point and Jackson sites and some of the Archaic traits previously recounted have been noted elsewhere as carry-overs into these later cultures. However, the numerical preponderance of Archaic traits at Poverty Point, the scarcity of pottery sherds, and the presence of tubular pipes and stone vessels, indicate a major pre-pottery culture level at this and related sites. It therefore seems reasonable to postulate a Poverty Point focus in northeastern Louisiana as a late Archaic or transitional culture, coeval with Tchefuncte and the late stages of the southeastern Archaic.

It is provocative also to note similarities between the Poverty Point culture and the Laurentian and Coastal aspects of early Woodland cultures as depicted by Ritchie[15] in New York and New England, which present late Archaic cultures in a period of transition to agriculture and pottery-making. Steatite vessels, tubular stone pipes, and pottery appear in varying degree in some of the sites, in addition to the Archaic assemblage of chipped and ground stone, bone, and antler artifacts.

Evidences of pre-pottery cultures in northwestern Louisiana are less tangible than those described for the northeastern and southern sections. We must depend on deductions from surface collections or occasional artifact finds and comparisons with the known artifact content of later pottery-containing cultures. Scattered sites are present along the lateral escarpments bordering the Red River Valley, also in the hill sections between major streams, at which large, crude projectile points and scrapers, grooved axes, hammerstones, pitted stones, mortars, and occasional tubular stone beads are found and where sherds of pottery are absent or scarce. These sites are usually small and without evidence of dense habitation.

FIG. 44. Artifacts from Poverty Point: 1–7, chipped projectile points; 8–11, drills; 12, graver; 13, grooved ax; 14–16, scrapers; 17, two-holed gorget; 18–24, stone beads (18, 19, and 23 are of red jasper; 21 is a crinoid stem); 25–26, hematite plummets; 27, pebble pendant or plummet; 28, tubular pipe, steatite; 29, portion of a tubular pottery pipe; 30, pottery figurine; 31–34, clay balls; 35, steatite vessel.

Some of the pottery-containing sites in similar locations have varying numbers of the above mentioned objects, in addition to the stone artifact assemblage of small projectiles, thin triangular scrapers, small flake drills, and ground celts which we associate with the pottery producing cultures in this section of the state. It is interesting to note that after the introduction of ground celts in the Marksville period and of small arrow points (so-called bird points) in the Coles Creek period, chipped

[14] James B. Griffin, personal communication, 1946.
[15] Ritchie, 1938.

and grooved celts and large projectile points seem to have disappeared from subsequent cultures. So far as I can ascertain, this is universally true of burial placements, although small projectile points and ground celts are frequent grave goods.

At those sites which yield pottery sherds, small projectiles, ground celts, and small scrapers or drills, in addition to the presumably older stone artifacts previously mentioned, the sherds usually fall into types characteristic of the Bossier and Alto foci,[16] usually a mixture of the two. Evidence to be presented later indicates that the Alto focus is earlier than Bossier, although considerable overlapping seems to have occurred. Incised and punctated clay-tempered pottery is characteristic of these cultures, with minor representation of one or two engraved pottery types in each. Krieger[16] estimates that the Alto focus existed at the Davis site in Texas between 1100 and 1350 A.D., although the Louisiana components may be somewhat later, and, in northwestern Louisiana, Alto seems to be contemporaneous with part of the Coles Creek period. The occurrence of artifacts which elsewhere are characteristic of a pre-pottery horizon, on a number of sites at which Alto and Bossier materials are also found suggests a late survival of the pre-pottery horizon in northwestern Louisiana.

The author has recently described[17] two unusual types of chipped stone artifact, not previously described and apparently confined to northwestern Louisiana and contiguous areas. These artifacts, the Albany type beveled scraper and the San Patrice type projectile point, are found on some of the sites described above and are thought to derive from the artifact assemblage of the late Archaic or transitional horizon. The San Patrice point is especially interesting because, although typologically different from the Folsom or fluted points, it seems to represent a late survival in this area of the traits of concave base, smoothed basal margins, and thinning of the basal segment by removal of longitudinal flakes.

Further evidence of a pre-pottery horizon in northwestern Louisiana may be adduced from the occasional finding of polished stone artifacts which are thought to derive from the older cultures. In one private collection[18] from this section of the state there are 7 two-holed gorgets and several other pierced tablets, 9 boatstones, 12 bannerstones (including bipinnate, prism, expanded center, and biconcave forms), and a number of plummets and tubular stone beads. Other collections in the area contain smaller numbers of these objects. Of course, some of these artifact types continue into the early pottery cultures, but to date only one Marksville and no Tchefuncte sites have been identified in the northwestern part of the state; hence, it is unlikely that many of these artifacts can be attributed to such sources.

With regard to older cultures, Stirling[19] has recently outlined two principal areas of distribution of Folsom finds, one following the high plains east of the Rockies from Canada to Mexico, the other following the eastern base of the Appalachians from northern New England to Louisiana. These two areas are joined by a belt south of the Great Lakes, but he suggests the possibility that alluvial deposits of the Mississippi basin may have covered the Folsom deposits, exaggerating the apparent separation of the two belts. Others[20] have suggested that Folsom and Yuma artifacts may have persisted to a later period in the eastern United States than in the West, since they have been found in the lower levels of several eastern Archaic sites.

No ancient sites have been found in Louisiana, but an increasing number of artifacts of the fluted, Clovis, and Yuma types have been recognized in collections from the hill country of central and northern Louisiana. We have recorded 12 fluted points (Fig 45: 9–14) from Caddo, De Soto, Webster, Bienville, Grant, Bossier, and Morehouse Parishes; 6 of the Clovis type (Fig. 45: 6–8) from Rapides, Bienville, and Webster Parishes; and 59 of Yuma type (Fig. 45: 1–5) from Caddo, Bienville, De Soto, Bossier, Sabine, Webster, and Claiborne Parishes.

Kniffen[21] states that he knows of no points of these types having been found in the southern part of the state.

The fluted points from Louisiana vary in length from 2 to 4½ inches, in fluting from par-

[16] Krieger, 1947.

[17] C. H. Webb, 1946.

[18] Collection of Edward F. Neild, Louisiana State Exhibit Building, Shreveport, Louisiana.

[19] Stirling, 1943.

[20] Martin, Quimby, and Collier, 1947; Griffin, 1946.

[21] Fred B. Kniffen, personal communication, 1946.

tial to complete, and in shape from long and slender to broader with slight contraction near the base. Fine chipping is always in evidence along the margins and all those I have seen have smoothed edges adjacent to the base, which is universally concave.

The Clovis type points are unfluted. but have the characteristic shape, with slightly contracting basal segments, smoothed along the margins, concave bases, and fine secondary chipping of the blade edges.

The Yuma-type points are longer than most of the fluted points from this area and nearly all have the squared or rectangular stem similar to the subtype which Howard[22] designates as Scottsbluff Yuma. Flaking is generally fine and, in all of the specimens examined, is transverse.

In conclusion, we note that there are evidences of at least a fleeting Folsom-Yuma horizon in Louisiana but no occupation sites have been found. Similar evidences on the basis of artifact typology suggest a pre-pottery horizon in the northwestern part of the state which may have survived to a fairly late date. In northeastern and southern Louisiana, the Poverty Point and Tchefuncte cultures are more definitely established and there is evidence to indicate that in each instance the culture extended from a pre-pottery period into the pottery-making horizon. These cultures show relationships with the widespread southeastern Archaic in its later stages. More distant relationships are suggested with Adena in Ohio and the Laurentian and Coastal of New England.

[22] Howard, 1943.

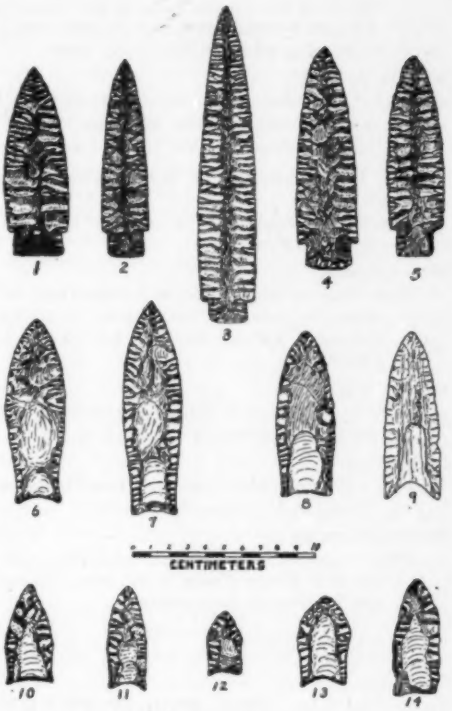

FIG. 45. Archaic projectiles from northwestern Louisiana: 1–5, Scottsbluff Yuma types; 6–8, Clovis type; 9–14, fluted points. (1–4, 6–9, 11–14, from Bienville Parish; 5, from Sabine Parish; 10, from Webster Parish. 9 is made from petrified palm wood. 1–4 and 10, from collection of E. F. Neild, Shreveport, La.; 6–9 and 11–14, from collection of W. W. Tod, Gibsland, La.)

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Shreveport, La.
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THE PRE-POTTERY FAULKNER SITE OF SOUTHERN ILLINOIS

RICHARD S. MACNEISH

INTRODUCTION

The Problem of Pre-Pottery Culture in Illinois

AS an introduction to the problem of pre-pottery culture in Illinois, it seems best to review briefly discoveries made previous to the excavation at the Faulkner site. The first such manifestation was reported by Langford at the Fisher site. The burials in the gravel deposits, lower level, were noted by him to have been without pottery and of a physical type different than that in pottery-bearing sites.[1] In 1931 it was mentioned that Kelly had unearthed fire basins of considerable geological antiquity at Plum Island.[2] Simpson and Shoenbeck have excavated similar fire basins in a shell mound in Woodford County.[3] Both finds are considered to be earlier than the use of pottery. The Folsom points found in Illinois are also thought to be of considerable age.[4] In a surface survey of the Carbondale area, Moreau Maxwell located sites which produced large flint knives, bannerstones, straight-stemmed points, quantities of flint chips, but no pottery.[5] In 1941, receiving a description of a site on which a bannerstone had been discovered, the author made a surface collection which revealed large quantities of flint chips, broken projectile points, and only two sherds. This site, the Faulkner component, was recorded as probably belonging to an early horizon.[6] The exigencies of World War II prevented excavation at the time.

[1] Langford, 1927, pp. 166, 167.

[2] Cole and Kelly, 1931, pp. 325, 326.

[3] A. M. Simpson and Mrs. E. Shoenbeck of Peoria, personal communication.

[4] Van Male, 1936, p. 53.

[5] Moreau Maxwell, unpublished thesis, University of Chicago.

[6] Massac County Survey, unpublished, University of Chicago.

In the summer of 1944, the University of Chicago, Department of Anthropology, decided to excavate the Faulkner site with the purpose of solving important archaeological problems concerning the pre-pottery cultures.[7] These problems were defined as:

1. The description of this pre-pottery culture complex and a consideration of its age.
2. The relationship of this manifestation to other pre-pottery cultures in America.
3. The relationship of this horizon to the pottery-bearing archaeological manifestations which followed it.

Geographical and Geological Description of Mx^{v}43

The Faulkner site, designated in the University of Chicago survey as Mx^{v}43, is located in the southwest corner of the northwest quadrant of section 24, township 16 S, Range 6 E, Massac County, Illinois. It is about nine miles east of the township of Brookport, Illinois, and two and one-half miles north of the Ohio River. Topographically, it is situated on the northern portion of the extensive bottom lands that flank the Ohio River.

Excavation has indicated that the ancient habitation occupied the top of a ridge. The U.S.G.S. topographical map illustrates the fact that this narrow prominence is well defined from New Liberty on the east to Unionville on the west (a distance of about ten miles). It might formerly have extended beyond either of these two points, recent erosion having obliterated the evidence. Extensive deposits of prehistoric refuse cause this ridge to be slightly elevated and to bulge southward at the site.

The area of the site has been cleared but has never beeen extensively cultivated due to its sloping sides and flinty soil. However, a large cornfield lies directly north of the ridge while a small one is adjacent to it on the south.

This smaller cornfield is on the edge of a large swamp that runs parallel to the ridge. The swamp is about one mile wide and extends from a point six miles west of the site (where it drains into Mud Creek, which in turn runs into the Ohio River) to New Liberty on the east.

South of this swamp and parallel to it are a series of smaller swamps or sloughs and lakes. Beyond these is the Ohio River. Northeast of these swamps are a series of small rolling hills which eventually give way to hills of considerable size with large outcroppings of limestone.

The basic soil in all the deposits south of these hills to the Ohio River is a sandy, yellow, tight-knit clay. The proportions of sand and clay in this deposit vary considerably. Waterborne deposits of sand are also found in this soil. As regards the Faulkner site, the ridge on which it is situated is composed of light sandy yellow clay with a small overlay of humus and refuse. However, immediately south of the ridge the situation is quite different. The basic soil is overlaid by sand, a definitely water-laid deposit.

A geological interpretation of this ridge, based on the factors of topography, waterways, and soil, justify the conclusions that the ridge represents an ancient river terrace and that the swamp with its connected stream lying south of it was at one time the bed of a river or lake. That this ridge was occupied by prehistoric man when the river or lake was next to it seems plausible. The fact that the sands are in part overlaid by alluvial human refuse and not yellow tight-knit clay seems to substantiate the above mentioned hypothesis, for if the refuse was not on the ridge at about the same time that the water deposits were laid down, the alluvial deposit over the soil would be yellow clay, not refuse.

Methods of Excavation

Since knowledge of the pottery-bearing archaeological manifestations in southern Illinois was adequate, it was important to determine if this site represented a pre-pottery horizon and, in that case only, to excavate it. Limited funds and the shortage of labor made it imperative that only the deepest and most extensive cultural deposits be excavated. In order to form any hypothesis concerning the geology or age of the site, adequate soil profiles were also necessary.

Therefore, it was decided to sample the area on which artifacts appeared by digging a num-

[7] I would like to thank Dr. Fay-Cooper Cole of the Department of Anthropology of the University of Chicago, who sponsored this field work. I am also most grateful to the Reverend Orange Faulkner, who allowed me to excavate on his property and who also skilfully assisted me in the excavation of this site. Thanks are also due to Joseph Caldwell and Ricardo Alegria, who assisted in the field work; to Susan Messerley, Elaine Blum, Patricia Colette, and Susan Miles, who assisted in the laboratory work; and to my wife, who did the drawings for publication. I am most grateful to Dr. James B. Griffin, Director of the Museum of Anthropology, University of Michigan, for his criticism and advice concerning this paper.

ber of five-foot squares that extended well into the basic soil. These five-foot squares were spaced 20 feet apart, and from them the relative depth of all the occupational debris was observed. Having determined the area of deepest human refuse, the two test squares flanking the deposit were connected by a trench and a large section on either side of the trench was intensively excavated by the vertical slicing technique.

Stratigraphy and Chronology

The top layer of earth on the site is composed of a loose, dark brown loam in which the roots of grass and rotting vegetation are mingled. This stratum is a humus layer and has been designated as Zone E (Fig. 46). Since the deposit had at least once been turned by the plow and is subject to weathering and redeposition, it is justifiable to include the archaeological material found in it with that picked up on the surface. (Analysis, furthermore, shows no difference between the materials of the two levels.) The material in the humus and on the surface is of several types. The pottery in this layer consists of one shell-tempered sherd (Kincaid Focus), 10 cord-marked, grit-tempered sherds (Lewis Focus), and 60 sherds of limestone-tempered ware (Baumer Focus). The artifacts are for the most part the same as those of the pre-pottery culture; a few (three) projectile points may be definitely assigned to the Baumer Focus.

Below the humus on top of the bank, there is a tight-knit clay stratum brownish-black in color. This I have called Zone C (Fig. 46). The depth of Zone C, situated on top of the bank, varies between one inch and two and one-half feet. In spite of the varying depth of this layer, it is roughly horizontal. Present in this deposit are artifacts (no pottery), horizontal streaks of charcoal, areas showing evidence of intensive burning, pits (both in the deposit and dug down below it), and burials. Pit 13 was intrusive into Zone C and contained Baumer sherds and Lewis sherds. Zone C represents a refuse deposit laid down by the prehistoric inhabitants.

Zone D, composed of the same type of soil as Zone C, appears along the bank and immediately below it (Fig. 46). This stratum contains artifacts and Baumer pottery (11 sherds), but is lacking in culture features, burials, pits, or fired areas being absent. This stratum is not horizontal. It is roughly parallel to the surface of the bank. Cleavage lines appearing in it run at the same angle. Its depth is almost negligible just south of the top of the terrace (one inch thick), but it becomes increasingly thicker as it progresses down the bank, until below the bank it has become eight feet thick. The characteristics of this zone—lack of burials, fired areas, and pits; lack of horizontal charcoal lines; lack of horizontal position; Baumer sherds to a depth of three feet; increasing depth from the top of the bank to the base; and slanting cleavage lines—lead to three possible conclusions. Either this deposit represents refuse materials thrown over the edge of the bank by inhabitants living on the bank, or it represents an alluvial deposit of refuse that had been washed down from the top of the bank after the inhabitants had left, or it represents a little of both. The finding of sherds in this deposit but no pottery-making occupation on top of the bank tends to negate the first possibility. On the basis of the above evidence it is reasonable to conclude that Zone D, whether an alluvial deposit or one composed both of refuse thrown down from the bank and of alluvium, is, for the most part, later than Zone C.

In the southernmost square, the lower levels are composed of sand, Zone B (Fig. 46). This sand appears to be water-laid, and since tight yellow clay (Zone A) comprises the basic soil in this area, it may be assumed that the sand is later. Underlying all strata, including the north part of this square, is a compact yellow clay. Both Zones A and B are sterile of human remains.

In conclusion, it appears that the stratigraphy and the sequence of cultures as seen at this site are as follows:

Zone E. Humus soil—Baumer, Lewis, and Kincaid, and Faulkner material.
Zone D. Alluvial or accretional refuse—Baumer sherds and Faulkner material
Zone C. Refuse—*Faulkner material* with Baumer material intrusive into it only in Pit 13.
Zone B. Sands—sterile.
Zone A. Basic clay—sterile.

The isometric drawning of the site graphically indicates the position of the strata (Fig. 46). Confirmation of the stratigraphy may be obtained by examining the other drawings and photographs made in the field (in the file of the University of Chicago, Laboratory of Anthropology).

The sequence of cultures as established at the

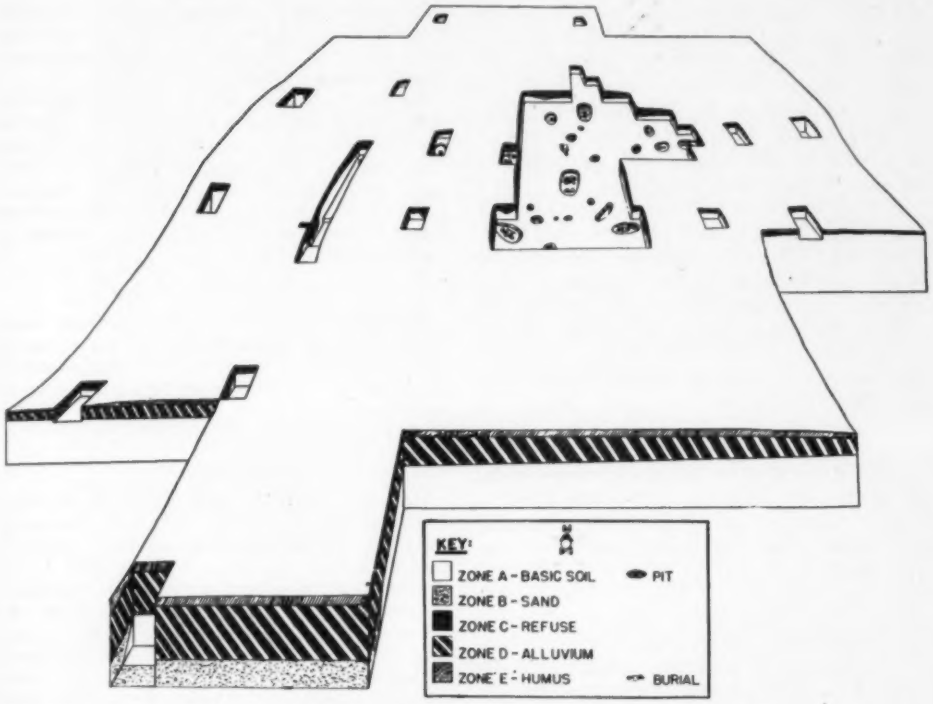

FIG. 46. Isometric drawing of the Faulkner site.

Kincaid sites, coupled with the stratigraphy found at the Faulkner site, gives us a comprehensive sequence of cultures for southern Illinois. A summary of this sequence, going from the most recent to the oldest is as follows:

4. Kincaid Focus, Mississippi Pattern.
3. Lewis Focus, Woodland Pattern.
2. Baumer Focus, Woodland Pattern
1. Faulkner Component, ? Pattern.

MATERIAL CULTURE

Features

The culture features at the Faulkner site are pits. These are numerous and vary considerably as to size and shape. They seem to have had four main functions, although all became filled with refuse and thus all had at least a secondary function as refuse pits. In 14 pits the only function appears to have been the disposal of refuse. Four of the pits were used for the roasting of food. That they were roasting pits is attested by the horizontal layer of burnt rock and burnt clay in them. In one pit a layer of burnt clay gives evidence that the pit was once a hearth. Seven were used for the disposal of the dead.

The earth in the pits was dark and interspersed with occasional flint chips, horizontal lines of charcoal, burnt clay, and artifacts. All pits, except one, extended from the refuse down into the basic clay. The exception, Pit 13, had cleavage lines that extended to the surface. It contained a few Baumer potsherds and a rather distinctive pestle, bell-shaped in form (in this area distinctive of the Baumer Focus). This pit is considered intrusive into the pre-pottery refuse and is thought to have been dug by the Baumer peoples.

Burials

Eleven burials were uncovered during the excavation. Two were so fragmentary that they defy description as to the position of the skeletons. One of these was represented only by a skull. It was, however, possible to determine that three of the remaining burials were semi-flexed (knees at more than a 90-degree angle to

the back), while the other six were flexed. Eight burials appear to have been placed in round or oval shallow pits. Three burials were in the refuse, with no burial pits discernible. In two cases, two skeletons seem to have been placed in the same pit. Artifacts were usually not associated with the burials and occurred only with one of the double burials.

The skeletal material from the Faulkner site was fragmentary and almost completely deteriorated.[8] Wet soil conditions added to the difficulty of locating and preserving bone. Only extremely painstaking excavation with orangewood sticks and paint brushes allowed us even to determine the outlines of the skeletons. For this reason no anthropometric data can be given in this report.

Artifacts

The artifacts of the site are discussed under seven major categories: projectile points, knives, drills, gravers, implements of ground and pecked stone, and miscellaneous objects. Supplementing the description is an illustration showing each type (Fig. 47). The number of each type found in the humus and in the pre-pottery horizon is also indicated.

Projectile points. In terms of the projectile point classification found in Cole and Deuel's *Rediscovering Illinois*, all the points belong to Type I.[9] However, the points found here may be further divided into six less general categories: stemmed, corner-notched, side-notched, triangular, basal-notched, and concave-based points. In the following description and illustration, some of the variations on these types will be indicated:

STEMMED POINTS

Subtype 1. These points are long (6–9 cm.) and narrow, with the body tapering toward the point, the sides very slightly convex, and the widest portions immediately above the stem (1.5 to 5 cm.). The points are about one-half as thick as they are wide (¾ to 1 cm.). The stem is usually straight, measuring about 1 cm. in width and 2.5 cm. in length. The base is usually straight, though two crudely excurved bases do occur. The shoulder, the area between the body and the stem, is sharp and perpendicular to the stem. The chipping is generally crude. A variant form appears in these points which has straight sides with serrated edges, well-defined shoulders, a straight stem, and a flat base. Fourteen of Subtype 1 were found below the humus, while seven were found in the pottery-bearing strata (Fig. 47: 1–4).

Subtype 2. In this type the body is short (about 4 cm.), wide (about 3 cm.), and in the shape of an equilateral triangle. The stem is narrow (1.0 to 1.5 cm. wide and from 2 to 4 cm. long) and straight. The shoulder is at right-angles to the body. The base is straight. The chipping is well done, and the body is thin. Five of this type were present in the pre-pottery levels, while two occurred in the humus (Fig. 47: 5–8).

CORNER-NOTCHED POINTS

These points are between 5 and 7 cm. long, with convex edges. The widest portion (between 2.5 and 3.5 cm.) is just above the stem. The stem is short and flaring, and the base is straight. The shoulders exhibit a definite tang. Of the eleven found, seven were discovered in the pre-pottery levels (Fig. 47: 9–12).

SIDE-NOTCHED POINTS

The range of variability within this type is great. Common to all specimens, however, is a well-defined notch situated 0.5 cm. above the base. The widest portion of the body is usually just below the notch (about 3 cm.). The base is either straight or concave. The secondary chipping is usually well done. It is in the shape of the body that variation usually occurs. There are evidently three main shapes. One shape has sides that run parallel from the base to the blade, and then break sharply to form a dull point, the length being roughly five times the width (Fig. 47: 13, 14). The second variety has straight sides that taper to an acute point, the length of the body being roughly four times its width (Fig. 47: 15). The final style is a small point in which the length is just greater than the width (the body being 6 cm. long and 4 cm wide). The sides are serrated and taper to a point (Fig. 47: 16). Of the side-notched type, 23 of the points occurred with the pre-pottery material, while 15 appeared with the Baumer sherds.

BASAL-NOTCHED POINTS

Only five of this type were found. Three occurred in the pre-pottery levels, and two in the later strata. These points are long and narrow (about 4 cm. wide and 8 to 9 cm. long). The body is tapering and straight, or slightly outcurving. The base has been notched so that the shoulders have a tang that extends almost as far down as the base of the stem (Fig. 47: 17, 18).

CONCAVE-BASED POINTS

Eight of these points were discovered in the pre-pottery refuse. This type has fine secondary chipping on both the base and the edges of the body. The base is concave, and seven of the points have a basal flute on one side of the body. The shape of the body of these seven points is quite similar. The length of the points varies from 6 to 8 cm., with a width at the base of between 2 and 6 cm. The widest portion of the point is at the base; the sides are slightly

[8] Evidently this region of southern Illinois has a soil with a high acid content. At the Kincaid site, although some 150 prehistoric skeletons and some 15 skeletons of Negro slaves were found, none was well enough preserved to give any anthropometric data.

[9] Cole and Deuel, 1935, pp. 53–5.

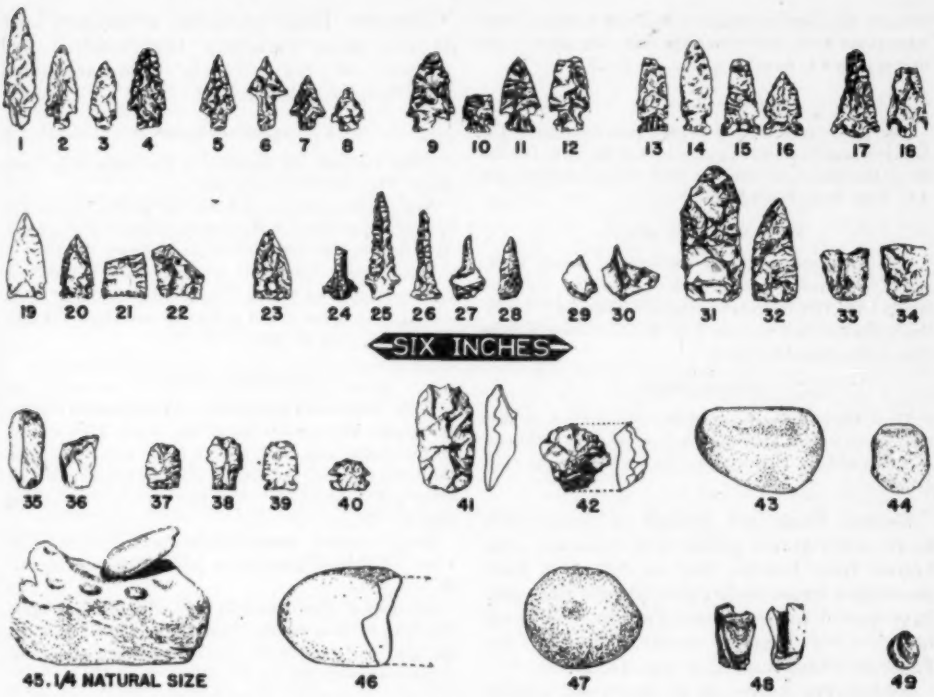

FIG. 47. The artifacts of the Faulkner site: 1–4, straight stemmed points; 5–8, broad bodied, straight stemmed points; 9–12, corner-notched points; 13 and 14, side-notched points with parallel sides; 15, side-notched with tapering sides; 16, small bodied, side-notched points; 17 and 18, basal-notched points; 19–22, concave-based points; 23, large triangular point; 24 and 25, winged drills; 26, triangular-based drills; 27, expanding-based drills; 28, needle-like drills; 29 and 30, gravers; 31 and 32, square-based knives; 33 and 34, round-based knives; 35, side scraper; 36, end scraper; 37, plain thumb-nail scraper; 38, straight stemmed, thumb-nail scraper; 39 and 40, side-notched, thumb-nail scrapers; 41, oval hump-back scraper; 42, round hump-back scraper; 43, grinding stone; 44, grinder; 45, mortar and pestle; 46, pestle or hammerstone; 47, anvil; 48, prismatic atlatl weight (bannerstone); 49, pebble pendant.

outcurving but taper to a rounded point (Fig. 47: 14, 20, 21). The eighth point, though broken in half, appears to be at wide variance with the others. It has a concave base and a flute that extends halfway up one side of the body. On the other side it has a smaller flute. The widest portion of the body seems to be three-quarters of the way up the body (Fig. 47: 22). This point falls within the range of types called true Folsom points. The others do not.

LARGE TRIANGULAR POINTS

This type shows very crude primary chipping and no secondary chipping. It has a straight base, which is the widest portion of the point (between 3.5 and 3.0 cm.). The sides are slightly convex and taper to a point. The implement is between 6 and 7 cm. long. Usually these points are quite thick, reaching their maximum thickness (roughly 1 cm.) in the middle of the body. Nine appeared in the pre-pottery zones, while five were found either in the humus or on the surface (Fig. 47: 2, 3).

Drills. The samples of the kinds of drills at the Faulkner site are few; there are 14 specimens belonging to four distinct types. Four styles of drill bases serve as the basis for this classification. The shafts and points of the drills are the same in all specimens but one. This specimen has a serrated shaft (Fig. 47: 25). However, due to the fact that this is a unique occurrence, and has a base of a known type, it also has been classified in terms of its base. The majority of the drills were found in the refuse material, only four being discovered in the pottery-bearing level. These fall into three different types, two exhibiting a flaring base, one a winged base, and one a triangular base.

WINGED DRILLS

Three specimens occurred in Zone C. This type has a

straight base and a straight stem, with a small round wing about 1 cm. down from the base. The shaft of the drill is from 4 to 6 cm. long (Fig. 47: 24, 25).

TRIANGLE DRILLS

The pre-pottery level contained two specimens. The base is straight and is the widest part of the drill. The rim above the base tapers into the shaft. These specimens are 3 to 7 cm. long (Fig. 47: 26).

EXPANDING-BASED DRILLS

The basal portion of these specimens is usually represented by a crudely worked bulb of flint. The shaft protrudes from this irregularly expanding base and is relatively short (2 to 4 cm.; see Fig. 47: 27). Three of these were in the pre-pottery level.

NEEDLE DRILLS

These are long (4 cm.), narrow, and as thick as they are wide (0.5 cm.). They taper to a point and are chipped to a curved base. Only two specimens were found (Fig. 47: 28).

Gravers. These are defined as "flakes with small, short graver points (not the burin type known from Europe, but an American form sometimes erroneously called a drill) that may have served for scratching lines or designs on bone."[10] Six gravers appear, all with the Faulkner Focus materials (Fig. 47: 29, 30).

Knives. The knives are of two types: square- and round-based. Twenty-nine specimens in all are present. Of these, only three were in the pottery-bearing levels, and all three were of the round-based variety. Eight round-based knives occurred in the pre-pottery level, along with 18 of the square-based type.

SQUARE-BASED TYPE

This type has a straight base. The sides are roughly parallel about half-way up from the base, then curve to a point. Some of the points are asymmetrical. There is considerable variation as to size and amount of secondary chipping. The specimens vary between 6 and 11 cm. in length and 2 to 4 cm.in width. The larger specimens usually have little or no retouching on the blade, while the small knives show some rather fine workmanship. In thickness, these vary from 0.5 to 1.0 cm. (Fig. 47: 31, 32).

ROUND-BASED TYPE

No whole specimen of the round-based type was present. However, approximate length can be judged by the partial specimens that were uncovered. The sides are curved, and the widest portion of the body (about 2 cm.) is halfway between the base and the point. Length is between 7 and 10 cm. The base is either completely round or rounded at either side, with a small center section of the base being straight (Fig. 47: 33, 34).

[10] Roberts, 1940, p. 56.

Scrapers. Large quantities of scrapers were in the refuse materials. One hundred and thirteen of the scrapers were associated with the pre-pottery refuse.

FLAKE SCRAPERS

These compose the majority of the kinds of scrapers found. They are of two subtypes:

Side scrapers. These long flakes, flat on the bottom and crudely chipped so that the scraper is thin in cross section, have the long side reworked for scraping (Fig. 47: 35).

End scrapers. The flakes are flat on the bottom and crudely chipped on the top. The shorter side or end shows secondary chipping, and it is that portion which was used for scraping (Fig. 47: 36).

THUMB-NAIL SCRAPERS

Plain. Many small flake thumb-nail scrapers are roughly rectangular and measure about 3 by 2 cm. They are flat on the ventral side, with a small hump and chipping on the dorsal side. One end and the sides are straight, and the other end is round. All sides show secondary chipping (Fig. 47: 37).

Straight-stemmed. Small straight-stemmed scrapers with a rounded nose for scraping are fairly numerous (Fig. 47: 38).

Side-notched. Also unearthed were side-notched scrapers that have a flat or concave base, a side-notch just above the base, and, above the two side notches, a rounded nose for scraping (Fig. 47: 39, 40).

HUMP-BACK SCRAPERS

These are the least numerous of the scrapers and can be subdivided into two types: oval and round.

Oval type. This is elliptical in outline, having a dorsal hump-back (convex surface). Ventrally it is flat; one end of the scraper slopes down sharply from the hump-back to the ventral side. This portion shows reworking (Fig. 47: 41).

Round type. This is round in outline, but in the remaining features is the same as the above-mentioned type (Fig. 47: 42).

Discs. Flint discs were found that are here considered scrapers. They are usually about 4 cm. in diameter. Two were uncovered in the pre-pottery level and one in the humus.

Pecked or ground stone implements. Six types of ground stone implements are represented: grinding stones, grinders, mortars, pestles, anvils, and atlatl weights (bannerstones).

GRINDING STONES

A number of rocks with shallow, broad, smooth grooves appear to have been used for grinding (Fig. 47: 43).

GRINDERS

A number of small, round or ovoid stones show flat, smooth, ground surfaces. These implements probably functioned as grinders to be used on the grinding stones. In

all cases, grinding stones were associated with grinders (Fig. 47: 44).

MORTARS

These are large flat boulders with a shallow hollowed-out center on either or both sides. The hollowed-out section appears to have been made by pecking or pounding, not by grinding. Two were discovered in the pre-pottery levels. One mortar has a number of small, deeply grooved holes. These holes are about 1 to 3 cm. in depth and from 2 to 4 cm. in diameter (Fig. 47: 45). It has been suggested that they were used in the crushing of nuts. The finding of charred hickory nuts and the use of similar types of stones by the California Indians tends to substantiate this hypothesis.

PESTLES

Oval-shaped river pebbles with one or both ends showing pecking appear to have been used as pestles in the mortars (Fig. 47: 46).

ANVILS

A number of small ovate-shaped rocks show small hollows made by pecking one or more sides. These, I believe, functioned as anvils, used in the manufacture of flint implements (Fig. 47: 47).

ATLATL WEIGHTS (BANNERSTONES)

A half of one stone atlatl weight was found. On the exterior it was highly polished, and the interior was carefully drilled. The specimen is about 5 cm. long and is approximately 3 cm. in diameter. The hollow center is roughly 1 cm. in diameter. In shape, the whole thing is roughly prismatic (Fig. 47: 48). There is one other stone with the beginnings of a drilled hole. This may be an atlatl weight that was started but never finished. As mentioned in the introduction, another atlatl weight (bannerstone) of the winged type is reported to have been picked up on the surface of this site. However, I was unable to locate the possessor of this artifact.

Miscellaneous objects. The following miscellaneous objects complete the list of material recovered:

1. A pear-shaped flat, polished pebble, with a small perforation in the narrow portion of the body, was undoubtedly used as a pendant (Fig. 47: 49).
2. Red ocher appeared in the refuse materials and small particles of it were found on grinding stones. This was probably functional in the pre-pottery culture.
3. Small particles of charred hickory nuts were found throughout the site. These nuts had been used as a food staple.
4. A perforated piece of antler had disintegrated so much that it could not be saved. Whether it represented an artifact or not could not be discerned.
5. Associated with Burial V were the outlines of a number of long-bone objects that did not belong to the skeleton. These undoubtedly represent burial artifacts, but exactly what type of artifacts they were could not be determined. One might guess that they were atlatl hooks or long awls.

CONCLUSIONS AND HISTORICAL RECONSTRUCTION

Conclusions

The Faulkner site represents a small sample of the material remains of one of the groups of ancient inhabitants of southern Illinois. Perhaps in the future comparable archaeological manifestations may be discovered and excavated in this or adjacent areas, particularly in the Carbondale region. For the present, however, this one site represents the remains of a group who were unique as to their chronological position, their lack of pottery, and their complex of traits.

It has been indicated that stratigraphically the remains of the Faulkner Focus are found beneath materials representing the Baumer Focus, as all the artifacts, burials, and cultural features of the Faulkner Focus were found in the strata that underlay a humus layer containing mainly Baumer burials. (A few Lewis and Middle Mississippi sherds were also found in the upper layer and perhaps were materials deposited considerably after the advent of the Baumer peoples.) For these reasons, the remains of the Faulkner Focus are considered older than those of the Baumer Focus. Analysis of materials from the Kincaid site has shown a sequence of cultures, with the Kincaid Focus, Tennessee-Cumberland Aspect, Middle Phase, Mississippi Pattern, as the most recent; the Lewis Focus, Bluff Aspect, ? Phase, Woodland Pattern, occupying an intermediary position; and the Baumer Focus, ? Aspect, ? Phase, Woodland Pattern, as the earliest. However, the stratigraphic evidence at the Faulkner site adds another culture to the sequence in this area by indicating that the Faulkner remains precede Baumer. Thus our chronology may be summarized as follows:

4. Kincaid Focus
3. Lewis Focus
2. Baumer Focus
1. Faulkner site

However, even more striking than the stratigraphic position of the Faulkner remains is the fact that in the strata containing the Faulkner assemblage not one piece of pottery was found. Since approximately 1,110 cubic feet of culture deposit was carefully exhumed, it seems that this refuse deposit has been adequately sampled. Therefore, the conclusion may be reached that the Faulkner people did not make pottery. At the time Mx^{v}43 was ex-

cavated no other cultural assemblage (at any period) had been found in Illinois which has this distinguishing feature.

We may best indicate that Faulkner was a distinct culture by an examination of its trait complex. In tabulating this evidence I have listed the number of occurrences of each trait at the Faulkner site, on the right hand side of the column. Also, the cultural remains have been grouped into complexes of traits which appear to have had certain common uses and social functions. In addition to the specific traits, two rather general characteristics have been grouped first and second under the subsistence complex. Comparison with other pre-pottery manifestations seems to justify their inclusion as culture traits.

SUBSISTENCE COMPLEX

1. Village situated along a body of water	1
2. Hunting and food-gathering economy (the evidence for this being the numerous grinding and pounding implements, many scrapers and projectile points, caches of hickory nuts, and absence of corn)	1
3. Refuse pits throughout the site	14
4. Irregular firepits in the refuse	1
5. Roasting pits filled with fire-cracked rocks	4
6. Caches of grinding implements	2
7. Caches of hickory nuts	1

ECONOMIC AND ARTISTIC COMPLEX

Chipped Stone

1. Winged drills	3
2. Long isosceles-triangular drills	2
3. Expanding-based drills	3
4. Needle-like drills	2
5. Flake gravers	6
6. Square-based knives	18
7. Round-based knives	8
8. Flake side-scrapers	15
9. Flake end-scrapers	33
10. Plain thumb-nail scrapers	20
11. Straight-stemmed, thumb-nail scrapers	8
12. Side-notched, thumb-nail scrapers	16
13. Oval hump-back scrapers	13
14. Round hump-back scrapers	5
15. Flint disc scrapers	3

Ground or Pecked Stone

1. Grinding stones	5
2. Grinders	2
3. Mortars	2
4. Anvils	2
5. Pestles or hammerstones	3

MILITARY AND HUNTING COMPLEX

1. Straight-stemmed points	14
2. Broad-bodied, straight-stemmed points	5
3. Corner-notched points	7
4. Side-notched points with parallel sides	6
5. Side-notched points with tapering sides	14
6. Small-bodied, side-notched points	3
7. Basal-notched points	3
8. Concave-based points	8
9. Large triangular points	9
10. Atlatl weights (bannerstones), prismatic type	1

CEREMONIAL COMPLEX

1. Burials in village refuse	11
2. Burials in shallow pits	8
3. Burials flexed on the side	2
4. Burials flexed on the back	4
5. Burials semi-flexed on the back	3
6. Double burials	2
7. Burials with artifacts	(1)
8. No grave goods with burials	10

Comparisons

The purpose of this section of the paper is to indicate the relationships of the Faulkner peoples to other groups. Basic to the establishment of the relationships of these archaeological manifestations are two assumptions: first, that archaeological manifestations of the same time period having a preponderance of cultural traits in common are of the same culture, and that each manifestation represents regional variation; secondly, that archaeological manifestations of different time periods having a preponderance of traits in common are genetically related.

The manifestations compared with the Faulkner materials are of two kinds. The first group, Oh 1 (Chiggerville),[11] Oh 2 (Indian Knoll),[12] and McL 11 (the Ward site)[13] of Kentucky, are non-pottery cultures that are spatially very close to the Faulkner site. Materials from the Parrish site, Kentucky, pre-pottery sites of the Carbondale area, and the Eva Focus in western Tennessee appear to be even closer (spatially and comparatively) but analyses of the materials have not been published, so that the results could not be used.[14] These groups are believed to be of the same general time period as the Faulkner site. The following group of sites have pottery and are the earliest known manifestations with pottery in central and southern Illinois respec-

[11] Webb and Haag, 1939.

[12] Webb, 1946.

[13] Webb and Haag, 1940.

[14] These conclusions are based upon observations of photographs of materials from the Parrish and Eva sites now in the Ceramic Repository for the Eastern United States at the University of Michigan.

tively: the Black Sand material in Fulton county[15] and the Baumer material in the area of the Faulkner site.[16]

The traits used in the following list are a selected group, in that I have compared only the general, burial, and stone traits found at the sites, not the shell, bone, and copper traits. The latter were omitted because the preservation of such at the Baumer and Faulkner sites was unlikely and because a comparison with the Kentucky sites where they are preserved would definitely weight and possibly invalidate the comparison. Fortunately, the former cultural items are sufficiently numerous for an adequate comparison.

From the comparative list, it may be seen that the Faulkner site and the components of the Indian Knoll Focus have a majority of their traits in common. Between the Faulkner site and the Chiggerville 61 per cent of the traits (40 of the total of 66) are identical. The Faulkner site shows the same percentage of traits in common with Indian Knoll as it does with Chiggerville (44 of 72), while the proportion is slightly less between the Faulkner site and the Ward site, being only 59 per cent (37 out of 63). The above data indicate that the Faulkner and the above-mentioned manifestations in Kentucky are possibly regional variations of the same (abstracted) culture.

The concept that the Faulkner site and the Kentucky sites are regional variations of the same culture is further borne out by comparisons with other pre-ceramic components in the eastern United States. A brief checking of Faulkner traits against the trait list of the Lauderdale Focus and the Indian Knoll Focus in the Pickwick Basin Report[17] reveals that the latter foci have a majority of their traits in common, but that the components of the Lauderdale and the Faulkner sites have few similar traits. One can check the Lamoka Lake Focus, the Indian Knoll Focus, and the Faulkner traits and arrive at a similar conclusion.[18] The Indian Knoll-Lamoka Lake traits and the Indian Knoll-Faulkner traits would show a majority of cultural items in common, but not Faulkner and Lamoka Lake. In each case, the comparison of the traits of pre-pottery manifestations indicates that those closest regionally are closest culturally; yet they are all linked together by two or more sites having a majority of traits in common. The best explanation for this phenomenon is that each of these non-pottery foci is a regional variation on the same basic culture.

The comparison of Faulkner traits with the Black Sand (F^v 77)[19] traits indicates a very close relationship, as 80 per cent (40 out of 50) of their traits are held in common. Since the Black Sand Focus has pottery while Mx^v 43 has not, I believe that it is safe to assume that the southern Illinois site is older than F^v 77. If this is true, then the Faulkner people (or groups similar to them from central Illinois which are still undiscovered) are ancestrally related to the groups which the Black Sand Focus represents.

The development of a pre-pottery culture into a pottery-making group is not confined to Faulkner and Black Sand of Illinois. In Louisiana the Copell site, without pottery, appears to be ancestral to the other pottery-bearing components of the Tchefuncte Focus.[20] The non-pottery levels are definitely ancestral to the levels with fiber-tempered pottery at Stalling's Island, Georgia;[21] in the Pickwick Basin of Northern Alabama the non-pottery levels of Lu^o 25 and Lu^o 59 would seem to be the progenitors of the levels having fiber-tempered pottery and limestone-tempered fabric impressed pottery;[22] while in New York at Brewerton the lower levels of the Robinson and Oberlanders sites are possibly the ancestors of the upper levels having ceramics.[23]

The grafting of pottery onto a pre-pottery artifact assemblage does not seem unusual, but the fact that in each case the kind of ceramics assimilated by the pre-pottery foci is very different, is rather strange. The Faulkner peoples appear to have started using grit-tempered pottery with a cord-marked surface finish; the Stalling's Island group, fiber-tempered pottery; the Lauderdale group, fiber-tempered pottery and limestone-tempered pottery with a fabric-impressed surface; the Copell group, clay and sand-tempered pottery with smooth surfaces decorated with incising, stamping, and punctating; while the earlier Brewerton peoples may have later started using thick

[15] Cole and Deuel, 1935, p. 146.

[16] Roger Willis, personal communication.

[17] Webb and DeJarnette, 1942, pp. 315, 316, and 317.

[18] Webb and Haag, 1939, pp. 103–6.

[19] Cole and Deuel, 1935, pp. 140–1.

[20] Ford and Quimby, 1945, p. 87. See also p. 228 in this issue. *Editor.*

[21] Fairbanks, 1942, p. 223.

[22] Webb and DeJarnette, 1942, pp. 78–80, 126–30.

[23] Ritchie, 1940, pp. 50 and 88.

	Faulkner, Mx° 43	*Black Sand, Fr 77*	*Chiggerville, Oh 1*	*Indian Knoll, Oh 2*	*Ward Site, McL 11*	*Baumer Site, Mx° 30*
1. Sites along waterways	x	x	x	x	x	x
2. Many refuse pits in middens	x	x	x	x	x	x
3. Roasting pits with fire-cracked stone	x	x	x	x	x	x
4. Caches of grinding implements	x		x	x	x	
5. Caches of nuts	x	x	x	x		
6. Hunting and food-gathering economy	x	x	x	x	x	x
7. Burials in the refuse	x	x	x	x	x	x
8. Burials in roundish pits	x	x	x	x	x	x
9. Burials flexed on their side	x	x	x	x	x	x
10. Burials flexed on their backs	x	x	x	x	x	x
11. Semi-flexed burials	x	x	x	x	x	x
12. Burials with artifacts	x	x	x	x	x	
13. Burials without artifacts	x	x	x	x	x	x
14. Multiple burials	x	x		x	x	
15. Irregular firepits in refuse	x	x	x	x	x	x
16. Narrow, straight-stemmed points	x	x	x	x	x	x
17. Broad-bodied, stemmed points	x		x	x	x	x
18. Corner-notched points	x	x	x	x	x	x
19. Basal-notched points	x	x	x			
20. Side-notched, parallel edged points	x	x		x		
21. Side-notched, tapering-edged points	x	x	x	x	x	
22. Small-bodied, side-notched points	x	x	x	x	x	
23. Large, rough triangular points	x	x	x		x	x
24. Flaring-based drills	x	x	x	x	x	x
25. Winged drills	x	x	x	x	x	x
26. Triangular-based drills	x	x	x	x	x	
27. Needle-like drills	x	x	x	x	x	x
28. Gravers	x			x		
29. Thumb-nail scrapers, plain	x	x	x	x	x	x
30. Thumb-nail scrapers, stemmed	x	x	x	x	x	x
31. Thumb-nail scrapers, side-notched	x	x	x	x	x	
32. Humpbacked scrapers, oval	x	x				
33. Humpbacked scrapers, round	x	x		x		x
34. Flake end-scrapers	x	x	x	x	x	x
35. Flake side-scrapers	x	x	x	x	x	x
36. Square-based knives	x	x	x	x	x	
37. Round-based knives	x	x	x	x	x	
38. Concave-based points	x				x	
39. Mortars (lapstones)	x	x	x	x	x	
40. Pestles (cylindrical)	x	x	x	x	x	
41. Grinding stones	x	x		x		
42. Grinders	x	x	x	x		x
43. Anvils (pitted hammerstones)	x	x	x	x		x
44. Atlatl weights (prismatic)	x		x	x	x	
45. Flat pebble pendants	x			x		
46. Red ocher	x	x	x	x	x	
47. Flint discs	x	x				
48. Winged bannerstones	?		x	x	x	
49. Full-grooved axes		x	x	x	x	x
50. Black Sand incised pottery		x				
51. Dismembered bodies	x	x		x		
52. Burials of separate skulls	x		x	x		
53. Caches of flint blades, knives		x	x	x		
54. Domestication of the dog		x	x	x		
55. Extended burials		x	x	x		
56. Dogs buried in separate graves		x	x	x		
57. Dogs in human graves		x	x	x		
58. Bell-shaped pestles			x	x	x	x
59. Conical pestles			x	x	x	x
60. Whetstones			x	x	x	x
61. Sub-rectangular bars			x	x	x	
62. Burials with ornaments			x	x	x	
63. Polished celts				x	x	x
64. Intentional breaking of atlatl weights			x	x		
65. Complete atlatls in graves			x	x		
66. Scrapers, drawshave type			x	x		
67. Beads, barrel-shaped			x	x		
68. End choppers				x		x
69. Mauls, full-grooved				x		
70. Hoes of slabs of stone				x		x
71. Balls of stone, polished				x		
72. Stone vessels				x		
73. Use of asphalt as cement			x			
74. Scattered post molds in refuse				x		x
75. Burials in sitting position				x		
76. Square post-hole houses						x
77. Large clay-lined conical fire basins						x
78. Ground celts with pointed base						x
79. Plummets						x
80. Rectangular gorgets						x
81. Reel-shaped gorgets						x
82. Spade-shaped gorgets						x
83. Hammerstones of boulders						x
84. Small ovoid hoes						x
85. Side choppers						x
86. Ovoid thumb-nail scrapers						x
87. Large flint-core implements						x
88. Stemless, concave-sided points						x
89. Convex-based side-notched points						x
90. Concave-based triangular point						x
91. Wide straight-stemmed, short-bodied points						x
92. Convex-based, stemless points						x
93. Expanding stemmed points						x
94. Baumer pottery						x

grit-tempered wares with a smooth surface marked by stamping, incising, combing, cord-marking, etc.

This divergence of our earliest pottery is one of the major problems of the eastern United States. Can these differences be explained by regional, independent inventions of pottery, local adaptations to the concept of pottery-making, diffusion of the idea of pottery from many different sources, or cultural lags in the adoption of pottery from one developmental sequence? Future work in pre-pottery manifestations should bear these possibilities in mind. Analysis of some of the pre-pottery sites having considerable depth with an eye to period delineation and comparison of the various pre-pottery periods in different areas, would do much to show the validity of the last-mentioned explanation. Comparisons (with the pre-pottery periods in mind) of the early pottery features in different areas might shed light on the other possible explanations.

The comparison of the traits of the pre-pottery site in southern Illinois with the Baumer culture, which sequentially follows it, reveals only 30 per cent of the traits present in both cultures. This seems to indicate that the Baumer site is not genetically related to Faulkner and is probably intrusive into the area. This is borne out by the fact that Baumer compares favorably with the late (pottery and non-pottery bearing) manifestations of the Lauderdale Focus and with materials from Watts Bar Basin of Tennessee. Thus, it may have evolved in Tennessee or Kentucky and then spread northward into southern Illinois.

SUMMARY

It appears that the Faulkner site represents the remains of a people who were an early hunting and food-gathering group, living along the banks of streams in southern Illinois. This group, though having a distinctive complex of traits, was related to similar groups widely spread over the eastern part of the United States (composing the supposed "Archaic" Pattern). At some later time this group, or another group almost identical to it in the north, invented or adopted pottery-making and, as a result, had a material culture like the one represented in the Black Sand Focus.

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Museum of Anthropology
University of Michigan
Ann Arbor, Michigan
April, 1947

CLARK WISSLER, 1870-1947

N. C. NELSON

AMERICAN Archaeology lost one of its most enthusiastic promoters and interpreters by the death, in New York City on August 25, of Doctor Clark Wissler. As one of the last of the passing generation of anthropologists with university training to enter the profession from another discipline—in this case Psychology—he came to the American Museum of Natural History in 1902, at the age of 32. He served at first as Assistant in the Department of Ethnology under Curators F. W. Putnam and Franz Boas; but not long after, probably on Putnam's departure, was advanced to Assistant Curator of Ethnology and by 1905 is recorded as Acting Curator of Ethnology. Succeeding Boas, on the latter's complete transfer to Columbia University in 1906, he was named Curator of the Department of Ethnology and finally, in 1907, Curator of the Department of Anthropology, a rank which he held until retired to emeritus status in 1942, at the ripe age of 72. In other words, Doctor Wissler was virtual head of the American Museum's Department of Anthropology for a period of 37 years, during which—among many other activities—he inspired, planned, and procured funds for archaeological investigations in the American field, ranging from the Arctic almost to the Antarctic.

The ancestry of Doctor Wissler is of more than passing interest. Details are lacking, but the available information is sufficiently convincing. His early forebears emigrated to Pennsylvania from Swabia, a now small district in Bavaria but once a large and powerful state in the Danube and Rhine headwaters region, embracing not only South Germany but parts also of Alsace and Switzerland, the ancient home, i.e., of the Suevi tribes mentioned by Caesar and Tacitus. This move took place, presumably, sometime between 1683 and 1750, when many tens of thousands of people in the general region sought religious and political liberty in the New World. Not a few of these refugees, incidentally, were devout Mennonites (somewhat akin to their new neighbors, the Quakers); but, although Doctor Wissler once told me (since confirmed by Webster's New International Dictionary under "Mennonite") of an uncle who served as a leader for one of the relatively recent of the twelve or more sects belonging to the denomination, he himself was notably neutral on matters of religious belief. To be perhaps a trifle more specific, Doctor Wissler was of so-called "Pennsylvania Dutch" extraction, which might signify little more than that his forebears once spoke a High German dialect but which, in his particular case, means that he was a good representative of the Alpine racial type. Parenthetically, some 25 years ago, I took the opportunity to call on a Wissler business firm in Heidelberg and was told that members of their clan "are scattered all over the Black Forest region" to the south.

But, to return to the American branch. About 1800 a great-grandfather of our subject, together with other members of the linguistic group, left one of the probably crowded Pennsylvania colonies to seek new lands farther west and settled in what is now Wayne County in east-central Indiana, where at least some members of the family have remained until recent times. Here, on a farm near Cambridge City, Wissler was born, September 18, 1870, the oldest of seven children (four boys, three girls) of Benjamin Franklin and Sylvania (Needler) Wissler, and in this general vicinity he spent all of his first 23 years.

Wissler's educational career was typical of the West. He received all of his preliminary training in the local public schools, finishing the grammar grades at Cambridge City and graduating, at barely 17, from the not far distant Hagerstown High School, where his father was superintendent at the time. Seeking perhaps to emulate his father, young Wissler at once began life on his own by teaching in the local rural schools for a period of at least five years and during the sixth year served as high school principal at Hagerstown. This ended his connections with the secondary schools. Having meanwhile accumulated the necessary funds, he next entered the Indiana State University at Bloomington (barely a hundred miles from home), probably in 1893, where he received his B.A. and M.A. degrees respectively in 1897 and 1899, thus completing the second stage in

Clark Wissler

his educational progress. In the latter year, also, he married Etta Viola Gebhart who, with a son and a daughter, survives him.

This brief recital, needless to say, reveals only the minor half of Wissler's activities. Apparently like his father, who at different times was farmer, school superintendent, editor and publisher of a country-seat newspaper, Wissler had an agile mind and never let himself be swamped in the bare routine of the immediate task in hand. Thus already, while teaching country schools, he must have improved his knowledge of the high school curricula and probably, in addition, developed a special interest of his own in the learning process itself. This latter is suggested by the fact that during his last two undergraduate years at the university, while specializing in Psychology and Education, he served as Assistant in the Psychology Department and was conducting laboratory experiments on "individual differences in mental abilities." Moreover, during the next two years, while working for his master's degree at Indiana University, he was Instructor in Psychology and Education at the Ohio State University in Columbus, where he set up a laboratory to continue his experiments. His results, we must suppose, were considered important for, after receiving his degree, he was in the same year (1899) appointed Assistant in Psychology at Columbia University, where his experiments were carried on for several years, serving it would appear, at least in part, to initiate our present "mental test" schemes.

Up to this time there is no evidence that Wissler had pursued formal courses in Anthropology or that he had any particular interest in the subject, except insofar as his prolonged laboratory investigations may have turned his thoughts in that direction. Indeed, it was probably in New York that he first met professional anthropologists, a contact which proved all but fatal to his psychological bent. The shift was not, however, made all at once. His assistantship finished, he received in 1900 a fellowship in Psychology and, under the aegis of James McKeen Cattell, was awarded his Ph.D. degree in the same subject in 1901. Remaining attached to Columbia, he apparently continued his psychological researches down to as late as 1903 and in the meantime, during the 1901–02 term, was instructor at New York University in Pedagogy. But by this time his interest in Anthropology had gained the ascendency.

Precisely how the change came about is not entirely clear, but involves no particular difficulty. According to A. L. Kroeber, who was present at the time, Boas and Cattell occupied adjoining offices and were on the most friendly terms, the students of one being in some instances urged to attend the seminars of the other. In addition, Livingston Farrand functioned in both the Psychology and Anthropology Departments and may have exerted some influence. Whatever the circumstances, consultation of the Columbia records reveals that Wissler, during the 1900–01 term, took courses not only in Psychology and Education, but was signed up also for three full-term courses in Anthropology, one taught jointly by Boas and Farrand and the other two by Boas and Farrand respectively. Wissler was therefore well prepared when, in 1902, he received his museum appointment and he continued to improve his fitness by serving first as Assistant and later as Lecturer in Anthropology at Columbia until 1909, when he suffered a severe breakdown in health from which he probably never fully recovered.

Wissler's responsibilities at the American Museum varied from time to time, three periods being distinguishable. During the first interval, from 1902 to about 1909, his time was divided between curatorial work and field research. In the first capacity he saw the addition of a new building-wing and consequently had a hand in, and probably in part directed, the expansion and general improvement of the ethnological exhibits. Until shortly before his time, it may be added in passing, most of the museum's anthropological displays had been archaeological. In the second capacity, inspired perhaps by the writings of Lewis and Clark, Catlin, Maximilian, Parkman, and Grinnell, he visited, between 1902 and 1905, ten Reservations representative of the Siouan tribes in South Dakota and the Blackfoot in Montana, gathering not only exhibition specimens but also extensive data on the material, social, artistic, and ceremonial aspects of these Northern Plains cultures, on which he promptly published four brief papers.

During his next and most productive period, from 1909 to 1928, Wissler, with the help of four newly appointed associates (Lowie, Goddard, Spinden, and Skinner by 1909, and others from time to time later on) to relieve him from curatorial routine, gave his time principally to the initiating and directing of field

expeditions in both Ethnology and Archaeology, to the editing of the department's publications, and to writing on his own account. Thus by 1918 he had published ten monographs on his Siouan and Blackfoot tribes, to which another was added in 1927. In addition, being probably unable to re-enter the field himself, he arranged for four of his staff members to go and, besides, encouraged four outsiders to lend a hand. The result was that within barely two decades 45 mostly monographic reports were published in the American Museum's *Anthropological Papers* relating to the language, life, and culture of various Siouan, Shoshonean, Caddoan, Kiowan, Athapascan, and Canadian Algonquian tribes, the majority of which were at home within Wissler's own favorite Plains area.

Wissler's interests were not, however, entirely absorbed by Ethnology. As early as 1916, Louis R. Sullivan was brought in to cultivate Physical Anthropology, to be succeeded, ten years later, by Harry L. Shapiro. Archaeology, too, commanded his genuine concern. What he personally did during the early years to encourage Harlan I. Smith and Alanson Skinner, except for minor local projects, is uncertain; but he at least planned work for Vilhjalmur Stefansson in the Arctic and wrote up some of the results. He initiated the studies of Herbert Spinden in Latin America and the work of Earl Morris, Leslie Spier, and myself in the Southwest. At my own suggestion he supplied A. E. Douglass with his first tree-ring material from ruins in the Chaco Canyon, New Mexico, which, supplemented by others, ultimately led to an absolute chronology. Also he made possible the work of Spier at Trenton, New Jersey, and my own efforts at relative chronologies for Florida and elsewhere. On various occasions he took time to enter the field for personal inspection.

Meanwhile Wissler's teaching instinct blossomed out again. In 1912 he published the first of the Museum Handbooks on the *North American Indians of the Plains*. In 1917 came the first edition of his *American Indian: an Introduction to the Anthropology of the New World*, a much needed systematic presentation of the basic facts of Indian life, past and present, in both the Americas. This was followed by two books of a more general or discursive character, namely *Man and Culture* in 1923 and *The Relation of Nature to Man in Aboriginal America* in 1926. Both were based on a series of semi-popular lectures, the one being an analysis of the contents and behavior of culture and the other a presentation of American Indian traits as controlled by environment. On these themes he expressly let himself go, enjoying the results probably as much as his scattered audiences. These accomplishments brought Wissler deserved general notice and, with the museum program curtailed by the first World War, he began to step outside. As a starter he functioned, in 1920–21, as chairman of the Anthropology-Psychology Division of the National Research Council in Washington, D. C., and at the same time became permanent consultant to the Bishop Museum in Honolulu. Finally, in 1924, he was appointed Professor of Anthropology in the Institute of Human Relations at Yale University, where he served until retired in 1940. Under Yale auspices, in 1925, he visited Australia, New Zealand, and Hawaii to help initiate field researches in those and other Pacific areas.

Wissler's last period of activity remained one of widely ranging interests. In 1928 he once more assumed general supervision of anthropological affairs at the American Museum and in 1935 was elected Dean of the Institution's entire scientific staff. As Curator-in-Chief for his own department he sought steadily to improve the exhibits but made no radical changes, leaving the halls in the main to those specially concerned. His own last contributions were limited to the development of several small topical exhibits and the construction of a number of miniature habitat groups. Field work meanwhile was encouraged along all lines, including Archaeology, in both North and Middle as well as South America. What Wissler did all this time as a university professor must be better known to his students. He rarely said anything about it; but his publication, in 1929, of *An Introduction to Social Anthropology* at least offers a suggestion. As a distinct diversion we have next, in 1938, his *Indian Cavalcade*, a book in which he reminisces pleasantly about his early experiences in the northwestern Indian country. Finally, in 1940, came his last major contribution, *The Indians of the United States*, a historical and biographical narrative devoted mainly to a general presentation of the changing life and culture of our principal linguistic family groups as observed during all of the past 400 years.

But Wissler kept on writing scientific and semi-popular articles almost to the end, as witness, for example, his contributions to the

1943–46 issues of *Natural History* on items of the world's food supply, such as wheat, corn, and rice, as well as other material-culture topics. In passing, the available bibliographic record indicates that he published at least 222 titles, begun in 1897 and distributed approximately as follows: Pedagogy 6, Psychology 12, Physical Anthropology 35, material culture 93, Social Anthropology 32, museum problems 6, and minor miscellaneous topics, forewords, etc., 38.

Outside interests in the meantime continued to keep Wissler on the go. He served for instance as official advisor to the Carnegie Institution in Washington D. C. and for the years 1940–43, as Vice-President to the Advisory Board of the National Parks Commission, an office which took him on many inspection trips all over the land. One of his last public functions was the supervision of the sealing and deposition of the Time Capsule at the New York World's Fair grounds in 1940. In his later years, he frankly admitted getting quite a kick out of all these contacts—sitting in on conferences, board meetings, etc.—and there are those in and out of the American Museum who profess to have found him always a sane and helpful advisor.

Naturally, in order to keep himself informed all around, Wissler maintained membership in a host of scientific and social organizations serving many of them now and then as President or Vice-President. Other memberships came to him throughout his active career by way of recognitions, ranging all the way from Phi Beta Kappa and Sigma Xi to the American Academy, the American Philosophical Society, the National Academy, and the Anthropological Institute of Great Britain and Ireland. An LL.D. degree was awarded him by Indiana University in 1929.

In conclusion, the Wissler record as outlined may safely be left to speak for itself. On the limited score of his original contributions to Anthropology, let the more competent speak, or let time be the judge. His reviewers, while they appear to accept his main conclusions, have at times complained of his occasional disregard for factual minutiae. This tendency, hardly to be denied, remains unexplained. However, in all fairness, he did once remark that, like another well-known anthropologist, he liked best to write first what he had to say and then afterwards to check with the authorities. Many things may well have prevented this last step. On the purely personal plane, meanwhile, there are no obscurities. During 35 years of pleasant association, in spite of his more or less precarious state of health, Wissler, like Prescott and Parkman, maintained a uniformly cheerful attitude—always genial, always a loyal Hoosier and a good story-teller. To one man's way of thinking, Clark Wissler set out as if to pursue original research; but nature, aided doubtless by circumstances, made him in the end primarily a teacher.

American Museum of Natural History
New York, N. Y.
October, 1947

FACTS AND COMMENTS

A SUB-POTTERY DEPOSIT AT COPAN, HONDURAS

During the spring of 1946, a deep stratigraphic trench was excavated at Copan, Honduras by the Carnegie Institution expedition. This trench, dug about 200 m. south of the Acropolis and just west of the old Copan River channel, revealed a complete sequence of the site's ceramic activity, this extending back well into the Archaic period. To make certain that no earlier deposits lay nearby, I made a survey of the old river bank in the general vicinity. The spot finally selected for investigation lay only a few yards south of the eastern end of the stratigraphic trench. Here the river had cut through a low mound and had exposed, underneath, a considerable depth of refuse deposit. The lower half of the river bank was obscured by a clay and dirt talus fallen from above, and so a vertical section, about 5 m. wide, was cut into the bank. The removal of the talus disclosed a rather disappointing situation as far as pottery was concerned, for the lowermost sherds here did not differ from those at the bottom of the stratigraphic trench. About half a meter below the lower limit of pottery-bearing soil there appeared, however, in the fresh cut, a thin layer of earth and charcoal, darker than the sterile river clay enclosing it above and below. This layer, when traced out to the weathered portion of the river bank, showed up in the escarpment as a definite longitudinal depression which extended several meters down the old gully until it was lost in heavy bush and talus.

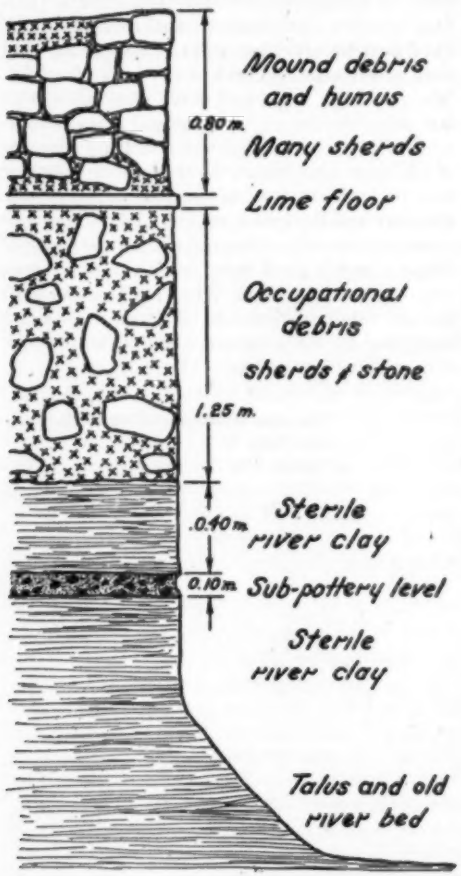

FIG. 48. Section of old river bank, Copan, Honduras, showing the stratigraphy associated with the sub-pottery level.

The situation of this sub-pottery stratum can be seen in the accompanying section, taken through the faced-off portion of the river channel (Fig. 48). At the top is a low mound of cut stone and earth, the latter containing sherds representing the latest Maya occupation of Copan. Below that is a thick floor of lime mortar, which divides the mound debris from underlying deposits of Early Classic Maya and Archaic Periods. Then comes an 0.40 m. stratum of absolutely sterile river clay, under which the charcoal-bearing sub-pottery level appears. Under the latter, the sterile clay resumes, and continues as far down as we were able to cut the river bank.

Because of the short time remaining before the end of the excavating season, a complete removal of the soil and debris above the sub-pottery stratum was not possible. Instead, we undercut the bank immediately above the deposit so that an area about 4 m. long and 0.75 m. wide was cleared. Here the charcoal-bearing layer was carefully exposed and completely excavated, all objects found being saved. The deposit averaged about 10 cm. in thickness and appeared to lie perfectly horizontal, although the top and bottom surfaces were quite irregular. From this layer, consisting of brown clay slightly less consolidated than the sterile material above and below, the following objects were recovered:

Innumerable fragments of charcoal, most of them crushed beyond recognition of source. A few, however, could be identified as small sticks and nuts.

Numerous bones of small animals. All of these were broken, and about half were blackened or charred by fire. Identification of these has not yet been made, but some of them belong to rodents, to judge from a few of the teeth recovered.

Over 100 small- to medium-sized chips of flint, none of them worked into definite tools (Fig. 49, *e–g*).

Seventy-odd small obsidian chips and one fairly large flake (Fig. 49, *a*). Like the flints, none of these represented recognizable implements.

A dozen pieces of soft stone, all rounded to some extent, presumably by river action.

All the above were scattered throughout the stratum, without a trace of stratigraphy or lensing. The deposit, therefore, does not appear to have been water-laid, although it might have been a beach deposit, intervening between the river floods which laid down the sterile clay layers below and above. At first, I attributed the presence of charcoal to some natural cause, such as a forest fire,

FIG. 49. Obsidian and flint fragments from the sub-pottery level at Copan. *a–d*, obsidian; *e–g*, flint. (½).

but Dr. A. V. Kidder, who visited the site later in the season, reports finding a concentration of charcoal together with some blackened river stones—the whole suggesting a hearth. The numerous broken and charred animal bones found in the stratum give further support to this idea.

If Dr. Kidder's find does represent a hearth, it is the only certain evidence of man's work in the deposit, although there are other, less definite, indications. One is the disarticulated, broken and charred condition of the animal bones, as mentioned above. Another is the presence of obsidian. No deposits of obsidian are known to occur in this portion of the Copan Valley, nor do the sands and other deposits of the river contain any of this material. It would appear, then, that all the obsidian found in the vicinity of Copan was imported by man.

As has been noted, no definite implements were included among the obsidian and flint chips recovered. Some, however, bear secondary flaking along one or more edges. Most of this flaking is probably the result of natural contact with other stones, but a few chips, retouched along a complete edge, or adjoining edges, may conceivably have served as tools, the flaking resulting from use (Fig. 49, *b–g*). In general, both the flint and obsidian fragments appear to have been separated from their cores through the action of heat, rather than by percussion. It is not, perhaps, too far beyond the bounds of reason to suppose that the inhabitants of the region at that time, ignorant of the art of flaking stone, shattered their nodules of flint and obsidian by subjecting them to fire. The fragments with suitable points or sharp edges were then picked out for use as tools and the rest were discarded. This method of manufacture might result in a deposit such as that found at Copan, with many irregular stone chips plus a few which might possibly have been utilized.

The age of this sub-pottery stratum cannot even be guessed. It is certainly older than the archaic pottery above it, but that is all that can be said with certainty. The thickness of river clay beds means little, temporally speaking, in an area of frequent flood-water deposition, so the sterile layer figuring in the Copan sequence may represent anything from a single rainy season to many years. The lack of ceramic material in the early layer may be significant, however, even considering the small area excavated, for all other deposits known in the valley abound in pottery. Lacking further investigation, however, I prefer to call this a "sub-pottery stratum" (referring to position) rather than a "pre-pottery stratum" (referring to time).

In summary, then, we have in the Copan Valley a thin stratum containing charcoal, animal bones, and stone chips. This stratum lies below the earliest pottery deposits found at the site, and is separated from them by half a meter of sterile clay. Evidence of human association with this sub-pottery deposit is slight but, considering the small amount of excavation done, is of sufficient importance to demand further investigation. Excepting only the human and animal footprints found in the volcanic mud of Nicaragua by Flint and Richardson,[1] this find at Copan is the only evidence of a possible pre-pottery culture so far uncovered in the whole of Middle America. As such, it should be of the greatest interest to students investigating the elusive origins of the archaic and classical cultures of this region.

JOHN M. LONGYEAR III
Peabody Museum
Cambridge, Mass.
May, 1947

[1] F. B. Richardson, and K. Ruppert, "Nicaragua," *Year Book, Carnegie Institution of Washington*, No. 41, pp. 269–71, Washington, 1942.

REMARKS ON THE PRONE BURIAL POSITION IN CHINA AND NORTH AMERICA

Some ten years ago Dr. Herrlee Glessner Creel in his *Studies in Early Chinese Culture*[1] discussed briefly the four Shang period burials (Nos. 18.2, 18.3, 18.4, 18.5) excavated at Anyang in 1929. The unusual position of the skeletons (lying fully extended on the face) intrigued the Chinese archaeologists of the National Research Institute, and they made inquiries about parallels elsewhere. All their queries drew blanks, and their conclusion therefore was that this burial posture was unique and had never been recorded in the literature prior to 1930.[2] More recently Li Chi has treated these four burials in greatest detail, and of them he says, "As far as can be determined, these four instances [of prone burials] in China are unique in the world."[3]

In October, 1938 after reading Dr. Creel's *Studies*, I wrote to him and described the prone (or as we call them, ventrally extended) burials of the Early Central California culture horizon[4] and sent a photograph of one such interment. This information apparently was not communicated farther by Dr. Creel, judging from Li Chi's printed article of more recent date. The essential point of all this is, of course, that the Shang (or Yin) culture can

[1] H. G. Creel, "Studies in Early Chinese Culture," *Studies in Chinese and Related Civilizations*, No. 3, Baltimore: American Council of Learned Societies, 1937, pp. 140 ff.

[2] It was so recorded in 1923, by Philip M. Jones, "Mound Excavations Near Stockton," *University of California, Publications in American Archaeology and Ethnology*, Vol. 20, Berkeley, p. 121.

[3] Li Chi, "The Prone Burials of Anyang." In "Studies in the Anthropology of Oceania and Asia Presented in Memory of R. B. Dixon." *Papers of the Peabody Museum*, Vol. 20, pp. 134–48, Cambridge, 1943.

[4] Since published in *American Anthropologist*, N. S., Vol. 41, No. 3, 1939 and in *Bulletin, Sacramento Junior College Department of Anthropology*, No. 2, 1939. Photographs of one of these burials occur in *Life Magazine*, December, 1939, and in the 1938 *Encyclopaedia Britannica Book of the Year*, p. 46.

no longer be regarded as exhibiting a burial posture unique in the whole world. Indeed, these Shang skeletons are not even the first recorded instances of prone burial.

Elsewhere in Asia, in the "East Caspian" culture investigated by the Sino-Swedish expedition to Central Asia, this same burial position has been noted; and in the pre-Shang Lungshan culture of China, Liang Ssu-Yung notes "face-down burials."[5]

In the New World I know of prone, or ventrally extended, burials from several sites of the Early Central California horizon;[6] from the deep levels of Site 2 at Buena Vista Lake in the southern San Joaquin Valley,[7] from the earliest known Santa Barbara Channel mainland culture called by David B. Rogers "Oak Grove,"[8] and from the Middle Cultures ("Archaic") of the Valley of Mexico.[9] Generally speaking all these occurrences are rather old—one might measure their antiquity in terms of millennia rather than centuries.

How much more extensive is the distribution of the prone burial posture in the Old and New Worlds will be known only after someone makes the necessary careful search of the literature. Then we may approach the question of independent development or historical connection to account for the repeated occurrences. My opinion now would be that peoples at different times in different places have selected for their own special reasons this type of disposal of corpses.[10] In part this opinion may reflect acceptance of Kroeber's view that methods of disposal of the dead may achieve the order of fashions, and are therefore subject to change.[11] In other words, if burial methods are unlikely to be particularly durable or stable cultural features, their value as evidence of long-range diffusion is materially descreased due to their inherent variability.

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July, 1947

ESKIMO STONE HOUSE RUINS ON THE EAST SIDE OF HUDSON BAY: A CORRECTION

In 1944 when I was at Port Harrison, I enquired if there were any Eskimo stone house ruins in the region, but the Eskimos knew of none except "strong" tent rings. Because of this, and from the reactions of our Eskimo crew to the houses and strong tent rings on the King George and Marcopeet islands, I concluded[1] that if there were any Thule type houses on the mainland they were too old to be easily recognized.

In 1946, I was again working for the Geodetic Service in that area. Through enquiries at Port Harrison, I heard of two groups of ruins, and at three out of our five stops on the Hudson Bay coast, I accidentally stumbled on other groups. Thus, not only are there house ruins on this coast, but they appear to be quite numerous.

Mr. J. Trafford, Hudson's Bay Company's post manager at Port Harrison, told me of two Thule type houses he had recently seen on Patterson Island (Fig. 50). They were on dry, grassy ground on the northeast side of the island, and about half a mile from the extreme south point. I judged their age to be about the same as the ruins see on Kidney Island in 1944.[2] On the smooth, basaltic rock of Patterson Island, there were many strong tent rings and other conspicuous rock structures well known to the local Eskimos, but as far as I was able to determine, they did not know of the houses.

FIG. 50. Map of the northwestern section of the Labrador Peninsula.

From Mr. Carlson of the Baffin Trading Company, I learned of another group of house ruins which Eskimos had recently found at the north end of McCormack Island (Fig. 50). I found this group to consist of at least

[5] Liang Ssu-Yung, "The Lungshan Culture: a Prehistoric Phase of Chinese Civilization, *Proceedings of the Sixth Pacific Science Congress*, Vol. 4, pp. 69–79, Berkeley, 1940.

[6] These are discussed at length in my *Archaeology of Four Early Central California Horizon Sites*, MS at the University of California, Berkeley.

[7] Waldo R. Wedel, "Archaeological Investigations at Buena Vista Lake, Kern County, California," *Bulletin, Bureau of American Ethnology*, No. 130, 1941, p. 88, Plate 15.

[8] D. B. Rogers, *Prehistoric Man of the Santa Barbara Coast*, Santa Barbara, 1929.

[9] G. C. Vaillant, "Excavations at Zacatenco," *Anthropological Papers American Museum of Natural History*, Vol. 32, Pt. 1, 1930, p. 188, Map 1; "Excavations at Ticoman," *Ibid.*, Pt. 2, 1931, pp. 423–4, Maps 1–2; "Excavations at El Arbolillo," *Ibid.*, Vol. 35, Pt. 2, 1935, pp. 168 ff.

[10] H. G. Creel, *op. cit.*, fn. 6, p. 141, ". . . the sweeper caste in India uses prone burial at present, to keep the ghost from walking."

[11] A. L. Kroeber, "Disposal of the Dead," *American Anthropologist*, N.S., Vol. 29, No. 3, pp. 308–15, Menasha, 1927.

[1] T. H. Manning, "Ruins of Eskimo Stone Houses on the East Side of Hudson Bay." AMERICAN ANTIQUITY, Vol. 11, No. 3, pp. 201–2, 1946.

[2] *Op. cit.*, pp. 201–2.

six single-roomed houses of about the same age as those on Patterson Island. They were at a height of 50 feet (aneroid) on top of a dry, grassy rise that sloped down about 300 yards to a bay on the north side of McCormack Island. One of the houses had been slightly disturbed, probably by the Eskimo who found them. I also stumbled on an additional group of houses about a mile south of the first. This group was also 50 feet above high tide level, and just on the east of the top of a broad, grassy knoll; it was about one-third of a mile from both the east and west coasts of the island. Four of these houses, one with three rooms, one with two, and two with one, were close together, and a little way off there were two separate one-roomed houses. These houses appeared very slightly more recent than the first group on McCormack Island. There were a few depressions in the ground which may have been older houses.

Near the center of Elsie Island and 300 yards from the east coast, I found a group of three houses at an estimated height of 50 feet (Fig. 50). They appeared to be about the same size as the second group on McCormack Island, but unlike these they were on gravelly ground, and the lack of surrounding vegetation suggested that they had been occupied for only a short time.

About three-quarters of a mile from the Geodetic Service beacon on the south side of the mouth of Kovik River at approximately 40 feet above the water level, there are four one- and five two-roomed houses (Fig. 50). A few hundred yards farther inland towards a lake is a single-roomed house, and quite close to the lake a second but slightly older one. Rather nearer the river than any of the houses are some depressions which may also have been dwellings. About 400 yards farther up the river near the top of a rise and still about 40 feet above the river, are three one-, three two-, and one three-roomed houses, as well as two structures that show as little more than circular depressions, but nonetheless are quite clearly houses. These two last appear to be at least twice the age of the majority. All the houses at Kovik not otherwise specified above, appeared to be about the same age and are probably all rather newer than those on McCormack Island, though slightly older than those on House Island.[3] Very large stones were used in the construction of the Kovik houses, and the surrounding ground is well turfed—both signs of permanent occupation. I discovered the above houses accidentally, but later learned that they were well known to an Eskimo guide we brought with us from Cape Smith.

Mr. Harry Ford, who has a trading store at Sugluk, told me that there is a group of old houses on each end of the island at the entrance to Sugluk Inlet, and I was shown a rectangular-socketed Cape Dorset harpoon head said to have come from the houses on that island. Leechman[4] excavated a Cape Dorset site on Nuvuk Island near the northeast corner of the Labrador Peninsula in 1936 (Fig. 50).

T. H. MANNING
Ottawa, Canada
June, 1947

[3] *Op. cit.*, pp. 201–2.

[4] Douglas Leechman, "Two New Cape Dorset Sites, ARCTIC ANTIQUITY, Vol. 8, No. 4, pp. 363–75, 1943.

YUMA POINT FROM WESTERN IDAHO

On May 23, 1947, Messrs. Olcott, Augden, and Caywood of the Columbia River Basin Recreational Survey, National Park Service, were making a survey of the proposed Johnson Park Reservoir site in western Idaho. The site is about 18 miles east of Brownlee on the Snake River at an elevation of 5,900 feet. In the course of the survey a projectile point was found by Mr. Caywood in the immediate vicinity of the reservoir area. This point undoubtedly belongs to the Yuma category.

The geological associations of the point, as well as its characteristics of oblique flaking, shape, and size, are consistent with its identification as Yuma. Johnson Park was apparently a normal erosional canyon which has been partially filled with glacial detritus. The point was found in one of the small stream beds above what is thought to be the shoreline of an old lake. The morain which caused this lake has since been cut through, leaving a swampy meadow, the base of which is composed of a yellowish glacial detritus. Soil tests by the Bureau of Reclamation show this yellowish earth to have considerable depth.

FIG. 51. Yuma point from western Idaho.

The point shows definite oblique flaking on both sides (Fig. 51). It is considerably battered from having been thrown. The point has been broken off and several large flakes split off when it hit. There is some indication of basal smoothing. A definite shoulder appears on one side.

LOUIS R. CAYWOOD
Columbia Basin Recreation Survey
National Park Service
Portland, Oregon
August, 1947

PLAIN STAMPED, SHELL TEMPERED POTTERY FROM NORTH CAROLINA

Like good wholesome gossip, one of the things that adds spice to the archaeologist's life is to find something that just isn't supposed to be. This is apparently what happened to me, although I did not realize the import of it until Joe Caldwell of the National Museum looked at the pottery excavated at the historic site of Fort Raleigh on Roanoke Island, North Carolina.[1] In the preliminary exploratory

[1] Exploratory excavations were carried on at Fort Raleigh National Historic Site by the National Park Service during the spring of 1947. Purpose of the excavations was to identify the site as that of the Raleigh colonies of 1585 and 1587, secure information on the fort and the settlement, and find objects associated with the settlement.

trenches excavated there last spring, a considerable amount of Indian pottery was found. With the exception of a few plain sherds, all of it is *simple-stamped* decoration, and most of it is *shell tempered* (Fig. 52). The shell is largely leached out, but there is little doubt that this is the tempering medium. Sherds were found near the bottom of the ditch

Fig. 52. Plain stamped, shell tempered pottery from Fort Raleigh, North Carolina.

("moat") around the original fort, as well as in the topsoil in the vicinity of the fort. In no case can we determine the chronological position of this pottery in relation to the sixteenth century English settlements, but I strongly suspect that it is contemporaneous. We hope to be able to establish the correct relationship in future excavations at the site.

It is also interesting that a few sherds were found of simple-stamped ware with crushed-stone tempering. These came from a different part of the site, and were not associated with shell-tempered sherds. Relative age of these two types is not apparent from the excavating thus far, although Caldwell is of the opinion that on the basis of the decorating they may very well be contemporaneous wares.

From a shell midden at Cape Hatteras, some 50 miles south of Fort Raleigh, I picked up a few sherds and found the following types represented:

Shell tempered; undecorated.
Shell tempered; plain stamped.
Shell tempered; fabric marked.
Sand tempered; fabric marked.
Sand tempered; cord-wrapped stick decoration.

The occurrence of simple-stamped decoration on shell-tempered ware is apparently unusual, and suggests interesting possibilities. It is expected that future excavations at the site will throw some light on this problem. I am also planning on locating, if possible, the two Indian sites shown on the White map, one on Roanoke Island and one across the sound on the mainland. If these sites, known to have been occupied in 1585, can be identified, they should yield valuable information. Another lead is the site on Roanoke Island about one mile from Fort Raleigh, where there are a number of small sand mounds of Indian origin. In excavating one of these mounds in 1895, Talcott Williams reports finding twelve Indian skeletons.[2] Williams does not describe his finds, nor do we know what ever happened to the material. If this site, or any other in this general vicinity, were found to contain European trade objects, their excavation might help to determine the age of the various pottery types found at Fort Raleigh and Cape Hatteras.

All this, brief and tantalizing as it is, points to the fact that there is a lot of interesting and valuable archaeology to be done along the Eastern seaboard, and that this area, archaeologically, is virgin territory.

J. C. HARRINGTON
National Park Service
Richmond, Virginia
August, 1947

[2] Talcott Williams, "Surroundings and Site of Raleigh's Colony," *Annual Report, American Historical Association*, 1895.

BOOK REVIEWS

Handbook of South American Indians. JULIAN H. STEWARD, EDITOR. Vol. I, *The Marginal Tribes.* Washington, 1946. xix+624 pages, 112 plates, 69 figures, and 7 maps. $2.75. Vol. II, *The Andean Civilizations.* Washington, 1946. xxxii+1035 pages, 192 plates, 100 figures, and 11 maps. $4.25.

The period following World War I was characterized by an increasing cooperation between North and South America, in matters of economy as well as culture, a cooperation which reached its culmination in World War II. Simultaneously, a rapidly growing interest in the pre-Columbian history of the various republics can be noted in the case of South America, and for the culture of the Indians of today. However, it is worth noting that not until 1930 did North American archaeologists and ethnographers become seriously interested in South America. The archaeologists arrived first on the scene. Cooperation was quickly established between scientists and institutions of culture in North and South America. The brilliant result achieved by this cooperation in Pan-American spirit is reflected in the *Handbook of South American Indians*, two volumes of which have been published.

In contrast to the *Handbook of North American Indians*,[1] the recently published *Handbook of South American Indians* is not presented in encyclopaedic form, but according to geographical-cultural districts. Thus the work is rather a collection of articles, which in a concentrated and comprehensive manner treat of the various cultures and peoples in South America. For one with an elementary knowledge of the ethnography and archaeology of South America, it is perhaps difficult at first to feel at home with a handbook of this kind. A register of things and names in a later volume would perhaps aid in this respect. Meanwhile, the new *Handbook* is easier to read by reason of its new arrangement.

Recognition must first of all be given to Julian H. Steward for his excellent editing of the work. One difficulty in a work of this kind is that the authors of the various special articles are likely to overlook works which cover the general cultural districts. However, here only a few such works have been omitted. Of works omitted in Volume I can be mentioned: Karsten, *The Civilization of the South American Indians*;[2] Stahl, *Der Tabak in Leben südamerikanische Voelker;* and *Zigarre, Wort und Sache* by the same author.[3] In Volume II Friederici's particularly valuable study, *Der Charakter der Entdeckung und Eroberung Americas*,[4] is not referred to. A still more regrettable omission is the same author's *Hilfswörterbuch für den Amerikanisten.*[5] Its great value lies in the detailed references to literature; it is also laid out in three languages, German—English—Spanish, and could have replaced the *Handbook's* insignificant Glossary to advantage. Krickeberg's *Beiträge zur Frage der alten kulturgeschichtlichen Beziehungen zwischen Nord- und Südamerika*,[6] which even touches on the Andean district in its cultural analysis, is another work which is overlooked. In the list of references, one misses also *Historia de la Nación Argentina*,[7] a work containing an excellent survey of Argentina's Indian culture. This is particularly to be regretted, since Márquez Miranda refers to this work several times in his chapter on the Diaguitas of Argentina.

Volume I of the *Handbook* embraces "The Marginal Hunting and Gathering Tribes of Eastern Brazil, the Gran Chaco, the Pampa, Patagonia, and Tierra del Fuego." Perhaps this classification is to some extent distracting, since it breaks up the geographical units and in a way the ethnographical ones. For example, if one wishes to look up information about a tribe or an Indian culture in a certain district in Eastern Brazil, previous knowledge about the culture characterizing the tribe or district in question is necessary. For getting a general view, the classification in its present form is justified, even if it results in the farming Gê tribes in the north being treated together with their kinsmen in the south, where the definition "Marginal Hunting and Gathering Tribes" is justified. The classification requires, however, that in Volume 3 of the *Handbook*, which will treat of "The Tropical Forest and Savannas," it should be pointed out which tribes in this district have a similar stage of culture, for example, the Siriono.

Two authors dominate the first part of the *Handbook*, which discusses the Indians of southern South America, Junius Bird and John M. Cooper. The investigations of Bird in southern Chile and Patagonia, already published, must be regarded as one of the most important works in South American archaeology during recent years. Bird's contribution stands out most clearly on comparing his compilation of the results of his research work, as it appears in the *Handbook*, with the chapter on the archaeology of the Greater Pampas, where Gordon R. Willey had the probably thankless task of compiling the results of the sporadic research work of others. The comparison emphasizes the need of investigation similar to that undertaken by Bird. The latter author has contributed a compilation of the culture of the Alakalif Indians as well. In this connection, one only wishes that Gusinde's work, *Urmenschen im Feuerland*,[8] as well as the author's great monograph on the Alakaluf, had not been delayed by the war but had been published in time to aid in portraying the culture of the Alakaluf Indians as completely as Cooper has portrayed the Yahgans and Onas.

Beside the introductory chapter, "The Southern Hunt-

[1] Frederick Webb Hodge, Editor, "Handbook of American Indians North of Mexico," *Bulletin, Bureau of American Ethnology*, No. 30, Pts. 1–2, Washington, 1907–10.

[2] Rafael Karsten, *The Civilization of the South American Indians*, London, 1926.

[3] Gunther S. Stahl, "Der Tabak in Leben südamerikanische Voelker," *Zeitschrift für Ethnologie*, Vol. 57, pp. 81–162, Berlin, 1925. "Zigarre, Wort und Sache," *Ibid.*, Vol. 62, pp. 45–111, Berlin, 1930.

[4] Georg F. Friederici, *Der Charakter der Entdeckung und Eroberung Americas*, Vols. I–III, Stuttgart-Gotha, 1925–36.

[5] Georg F. Friederici, "Hilfswörterbuch für den Amerikanisten," *Studien über Amerika und Spanien*, No. 2, Halle, 1926.

[6] Walter Krickeberg, "Beiträge zur Frage der alten kulturgeschichtlichen Beziehungen zwischen Nord- und Südamerika," *Zeitschrift für Ethnologie*, Vol. 66, pp. 287–373, Berlin, 1935.

[7] Ricardo Levene, director general, *Historia de la nación Argentina*, 2nd Edition, Vol. 1, Buenos Aires, 1939.

[8] Martin Gusinde, *Urmenschen im Feuerland*, Vienna, 1946.

ers," and the one referred to on the Yahgan and the Ona. Cooper has written the chapter dealing with the Chono, and the Patagonian and Pampean Hunters. His work in the main has the same comprehensive character as Willey's, with the difference that, except for the Chono, Cooper has had a decidedly richer source of material. Cooper's portrayal attests the author's thorough knowledge of the literature.

The little that is known of the poor culture of the Huarpe is presented by the Argentine scientist Salvador Canals Frau. His compatriot Antonio Serrano describes the Charrua, while it fell to S. K. Lothrop to give a description of the conglomerate tribes living in the district of the La Plata River at the time of discovery.

In regard to the archaeology of the territory referred to here, only a couple of remarks will be made. The Querandi ceramics influence should stretch decidedly farther south than suggested. This can be proved by a collection from Cabo Curioso in the territory of Santa Cruz, at the Gothenburg Museum, some of the examples of which have been published in the Gothenburg Museum's Yearbook of 1935.

Willey suggests the hypothesis that the Pampa cultures should be the product of a people who were forced out of the Andes or Tropical Forest orbit of living, and who adjusted to an inhospitable environment. This hypothesis hardly seems to be probable. Living in a tropical district with its lack of stones implies to a great extent giving up the culture of a Stone Age and its various techniques. Thus it appears to be more or less improbable that a people forced out of a primeval forest district to the plains of the south, would have immediately returned to a stage of the Stone Age so advanced as the finds from this district presuppose.

From an ethnographical point of view, no district of South America has been so deeply studied as El Gran Chaco, judging by the number of publications connected with it. For many years there has existed a comprehensive historical survey of the spread and migration of the various Chaco tribes, from the time of discovery to about 1900,[9] while a comprehensive work on the ethnography of the Chaco tribes has been only an object to be desired. A. Métraux, who by means of a number of expeditions and publications is well acquainted with the Indian culture of the Chaco district, has composed that part of the *Handbook* dealing with these various Chaco tribes. As regards the number of pages, his work is the largest contribution, reflecting to some degree the richness of the literature as well as the large number of language groups and tribes dealt with in this part of the *Handbook*. His excellent historical survey, partly based on Kersten's work referred to above, is supplemented by a short account of the living conditions of the Chaco tribes of today written by the Russian-Paraguayan Indian authority Juan Belaieff. This account is particularly interesting in that it gives a glimpse of the acculturation process that the Chaco tribes are experiencing now, a change that was greatly accelerated by the Chaco War of 1932–35.

Métraux's study could hardly be more exhaustive within the range of a handbook, but one or two details might well be added. Possibly the author was forced into limiting his information out of a desire to avoid pure enumeration. With my own study of Chaco and museum collections as a point of departure, a few such omitted details will be mentioned here. The conical basket for fishing is also known to the Toba, as well as the fishhook which in ancient times was made of two small bones, one pointed and both bound together so as to form a pointed angle. The fox trap with sliding door is spoken of among the Guarani Indians in Paraguay as well,[10] and is pictured from the Mocovi by Bauke.[11] In both these cases the trap is used for jaguar. Possibly it became known through Andean or European influence, for it appeared in the highlands made of stone for catching fox.[12] Another primitive type of trap from Toba not referred to, consists of a cylindrical cage of wooden sticks with an opening, or a net stretched over bows of branches into which small birds are enticed. The bird-trap from Mataco, reproduced as Figure 26, *a*, appears among the Mestiz in La Candelaria, Salta, and Tartagal. Another result of Mestiz influence is doubtless the skin jacket worn by the Toba when passing through regions with thorny undergrowth. The netting and lacing technique pictured in Figure 33, *k*, appears in only one connection, that of remaking a fishing net into a carrying net, when the mesh is shortened by lacing so that the fruit will not fall out. Métraux believes that the long wooden whistle of the Chaco is not an Andean culture-element, as Nordenskiöld had tried to establish. According to Métraux, such a whistle has never been found in the Andean culture region. In the collection at the Gothenburg Museum, however, there are two such archaeological finds (30.2.144 o and 30.2.145 v) from the coast land of Peru. Further, the pipes of Pan, as well as the bull-roarer, appear among the Toba. On page 353 Métraux declares that the present writer has stated that the Toba use a sort of bull roarer in order to bring rain. As a matter of fact my statement was that the object in question is used for stopping an over-abundance of rain. Among the omitted toys can be mentioned a wicker ring appearing among the Toba, which is rolled on the ground and caught up with a whip supplied with a little stick at the tip of the lash, as well as a game connected with betting, in which two reeds are used, each having a side-projection like a hook. The hooks are laid one upon the other, and the reeds are then pulled apart. The one who loses his hook loses the bet. The game is known otherwise only among the Šerente, although in a somewhat varied form.[13] Métraux's summing up of the culture of the Chaco Indians is excellent, and all that one can criticize is the author's own inferior photographic material, depicting starving dogs and Indians in "culture rags," which could very well have been omitted or replaced by better ones, for example, from the works of von Rosen or Erland Nordenskiöld. As regards Map 4 of "The Tribes of the Gran

[9] Ludwig Kersten, "Die Indianerstämme des Gran Chaco bis zum Ausgange des 18. Jahrhunderts . . . ," *Internationales Archiv für Ethnographie*, Vol. 17, pp. 1-75, Leiden, 1905.

[10] J. R. Rengger, *Reise nach Paraguay in den Jahren 1818 bis 1826*, Aarau, 1835, pp. 202–3.

[11] Guillermo Fúrlong, Cárdiff, *Entre los Mocobies de Santa Fe*, Buenos Aires, 1938, pp. 64–5.

[12] R. N. Wegner, *Indianerrassen und vergangenen Kulturen*, Stuttgart, 1934, p. 119.

[13] Curt Nimuendajú, "The Šerente," *Publications of the Frederick Hodge Anniversary Publication Fund*, Vol. 4, Los Angeles, 1942, p. 73.

Chaco," it should have been mentioned that this was a remodel of the two maps included in the work of Kersten quoted above.

Just as in the part of the *Handbook* dealing with the Indians of southern South America, it is chiefly two authors who are responsible for the next part, dealing with the Indians of eastern Brazil, namely Robert H. Lowie and Alfred Métraux. A third name comes into view in connection with several chapters—Curt Nimuendajú. Also, in the chapter on the Guayaki, Herbert Baldus is a collaborator.

Without any intention of belittling Lowie's and Métraux's contribution, one might dare to say that it is greatly due to the efforts of Nimuendajú that the part on the Indians of eastern Brazil is so exhaustive. This author's research work among the Canella, Apinaye, Šerente, and others shortly before his death, must be regarded as the most important study of South American ethnography during recent years. In regard to the organization of tribes, his research work has opened new fields. The tribal organization discovered by him is the dominant theme in his articles on these Indians. Only sporadic information is given in these works in regard to material culture. To some degree this fact is noticed again in the comprehensive accounts appearing in the *Handbook* on the basis of Nimuendajú's investigations. When one reads Lowie's chapter on the central Gê, one cannot help expressing a wish that the author had had the opportunity of studying the rich collections from this region which, thanks to Nimuendajú, are now in Gothenburg, Belém do Pará, and perhaps are still in several German museums. In the introductory chapter, also, one feels the lack of the excellent general geographical survey of the district which is so apparent in other prefaces in the book. As it is, the introductory chapter has become rather a synopsis of information appearing later, though in a more detailed form. The ethnographical articles are supplemented by two chapters archaeological in content. One, treating of Lagoa Santa Man, is written by Anibal Mattos, while the other, which gives an account of the Sambaquis of the Brazilian coast, is composed by Antonio Serrano.

On reading Volume II of the *Handbook of South American Indians: The Andean Civilizations*, what surprises one who has received but meager information on current archaeological and ethnographical investigation in western South America during the war, is the amount of field research undertaken by North American archaeologists. The Institute of Andean Research is due special praise in this connection for the manner in which it has arranged and supported this work. Because of this work, great gaps in our knowledge of the Andean cultures have been eliminated. Several of the articles in "The Andean Civilizations" are therefore the result of research work as yet unpublished. Many articles are written by South American professional men, the majority, however, being the work of North American experts.

Compared with the first volume of the *Handbook*, it is evident that the photographic material has been chosen with great care. Excepting the reproduction of older maps, those in Volume II are excellent. The general map of Peru, however, could have been made larger, so that the places of investigation referred to in the work could be placed on it. Also a reference scale should have accompanied certain illustrations, for example Figure 13, *a*, where the uninitiated might easily get a wrong impression of the size of the vessel. A district that was entirely omitted, but that might have been worthy of at least a remark, is that once populated by the Lipes and Chica Indians, in the southeast part of Bolivia. Knowledge of this district is scanty, but what we have, for example, Métraux's *Contribution a l'archéologie bolivienne*,[14] shows that there evidently existed a culture that was to some extent independent, with special types of vessels. Moreover, this district should be worthy of archaeological investigation. It was most gratifying to see the generous space accorded the culture of the Indians living in western South America today, and the development of culture after the Spanish Conquest.

Wendell C. Bennett has made the largest contribution to the volume on the Andean Civilization. Without doubt he had the two most difficult tasks, the composing of the general introduction and the chapter on the Central Andean area. However, Bennett was fully competent for this work. He had already made his mark as a capable archaeologist through a number of specialized studies of the different parts of the Andean culture. In both articles referred to above, he shows that he can treat a more comprehensive subject as well. He does not allow details of information to stand in the way of the context as a whole. Any criticism that might arise can only be aimed at his omission, through his attempt at concentrated form, of references to studies and investigations which in spite of being comprehensive to a lesser degree, are yet of importance for the complete picture of a culture. The decadent but simultaneously independent Tiahuanacu culture shown by Erland Nordenskiöld to have existed in the Misque valley,[15] is completely overlooked. Bennett states that although a number of trophy heads have been preserved, none are of the shrunken head type so characteristic of the Jivaro Indians. A predecessor type to Jivaro's "tsantsa" is known, however, through discoveries from Nazca (Krickeberg's work quoted above, note 6). Nordenskiöld's pointing out a pre-Columbian unit of weight in Peru[16] should also have been mentioned. The Incas' use of the bola is said to be ascribed to contact with the Plains tribes. The bola is rather a culture heritage from Tiahuanacu times, since the conical object of stone which the author met with at places of discovery together with Decadent Tiahuanacu ceramics can hardly be explained other than as bola weights. One observes with particular gratitude Bennett's listing of the various synonyms for cultures and epochs. However, the listing should have been accompanied by information as to who introduced the various terms, just as Rowe did in his account of the Highland divisions in the chapter on the Inca Indians. Bennett also gives a few suggestions about the need for new studies in connection with the two articles with which he introduces Volume II of the *Handbook*. Here, he speaks of the possibility of applying the science of tree-ring dating to the Andean region. I think I should mention in this connec-

[14] Alfred Métraux, "Contribution a l'archéologie bolivienne," *Journal de la Société des Américanistes de Paris*, Vol. 25, pp. 279–318, Paris, 1933.

[15] Erland Nordenskiöld, "Die östliche Ausbreitung der Tiahuanacukultur in Bolivia und ihr Verhältnis zur Aruakkultur in Mojos," *Zeitschrift für Ethnologie*, Vol. 49, pp. 10–20, Berlin, 1917.

[16] Erland Nordenskiöld, "The Ancient Peruvian System of Weights," *Man*, Vol. 30, Art. 155, pp. 215–21, 1930.

tion another, perhaps more practicable method—especially in view of the great possibilities my American colleagues have for field research—namely radium analysis of shells. The method has been applied with surprising results to oyster shells from Swedish Stone Age dwelling sites by Professor Hans Pettersson of the University of Gothenburg. Unfortunately, the results have not been so successful when applied to some shells the author took home from dwelling sites in northern Chile, possibly because of the fact that the material I had at my disposal was rather imperfect.

Rafael Larco Hoyle was entrusted with the chapter on "Culture of the North Coast of Peru," and John Howland Rowe, with the chapter on "Inca Culture." The work of both indicates a thorough acquaintance with the respective districts. Rowe correctly points out, in connection with the Inca house, that the study of Inca domestic architecture has been rather neglected in favor of the more impressive public buildings. Personally, I think it probable that the rectangular stone house with gabled roof, built either of adobe or of field stones laid in mud, as we find it in the Cuzco district, came into being through the influence of the advanced Inca stone architecture in Cuzco, Macchu Pichu, and other large settlement-centers in this district. The dwellings of the common people had another appearance. In 1938 I had occasion to investigate several villages of *mitimaes* in the Desaguadero district, dating from the time before and immediately after the Spanish Conquest. The houses were circular; the floors lay half a meter below the surrounding ground surface; and the walls were marked by a row of stones placed edgewise, which prevented the earth from falling into the houses. In one house there was a platform (sleeping-place) of earth and stones on the west side just opposite the entrance. Probably we have here the type of house which was that of the common people. In another village, where Inca ceramics of Cuzco type were encountered along with iron articles, there were, besides the round house foundations, square ones of similar construction.

An interesting problem, moreover, is that of the meaning and grouping of the colonies of the *mitimaes*. The authors who touch on the manufacture of Indian pottery, as well as weaving, within the Andean culture district in modern times, seem to stress altogether too much the fact that these are an occupation for men as well as women. The participation of men in the manufacture of both ceramics and textiles may be something that came into existence after the Spanish Conquest. A fact that speaks in favor of this statement is that when a man weaves, almost without exception, he uses a loom of European type. In spite of more than four hundred years of contact with white men, the potter's wheel (as well as the spinning wheel), has not been accepted by the Indians. In cases where it does appear, I cannot say if it is managed by men or by women. In other parts of South America, the manufacture of ceramics is exclusively women's work. Thus it would seem as if the colonies of *mitimaes* were made up of whole families, and that it is through the women of these families that the Inca type of vessels were widely distributed. In South America, textiles and ceramics are the means of expression for artistic activity. Here, therefore, the development of art is mainly due to the efforts of women.

Special chapters have been devoted to the Andean calendar and Cuzco archaeology. Both are written by Luis E. Valcarcel. "The Cuzco Archaeology" consists mainly of a summing up of the writer's investigations in the neighborhood of Cuzco in connection with the 400 years that have passed since the Spanish Conquest. One could have wished that this prominent research worker, or perhaps some other, had treated of Cuzco itself, the place in western South America that is richest in Inca finds.

Bennett's suggestions for future investigation in South America surprises one by its frequent reference to the living Indians in western South America. Apart from Métraux's works on the Uro-Chipaya Indians, there are no serious studies in this field. The overwhelming archaeological material has caused the authors to forget the living Indians for those that are long dead. The articles in the *Handbook* devoted to the Quechua and Aymara Indians and to the Indian culture and its development after the Spanish Conquest, are the first general attempts at study in this direction. These consist of George Kubler's "The Quechua in the Colonial World," Bernard Mishkin's "The Contemporary Quechua," Luis E. Valcarcel's "Indian Markets" and "Fairs in Peru," "The Aymara" by Harry Tschopik, Jr., and Weston La Barre's "The Uro-Chipaya." The works treating of living Indians are based to a great extent on the research work of the authors themselves and are therefore perhaps somewhat one-sided in that they reflect only the Indian culture of those regions investigated by the authors. For the same reason it is easy to complement this material by means of observations from nearby districts. As regards the Aymara Indians, we can mention their use of the snare trap,—a long string with about 20 horsehair snares lying partly covered by water—in catching birds in Titicaca; sacrifices at places where lightning has struck; the custom of quelling an epidemic by rubbing the body with a coin, fruits and such placed in a basket which is smuggled over the boundary of the neighboring village; rites at the graves of the dead on the third day of November; the use of quipus today; and the late-developed picture-writing, written on paper—previously on skins—or reproduced in relief, etc. As a relic of the old connections with the lowlands in the east, there is the use of feathers of purely tropical birds as dance decorations, the use of calabashes as reverberators for trumpets, etc. In Tschopik's article a brief survey of chullpa graves as being typical of the Aymara culture is included. Unfortunately, Nordenskiöld's investigations in this field[17] have escaped the author's notice. Likewise he overlooks Juan de Solorzano Pereira's valuable work *Politica Indiana*,[18] which gives important information on Spanish political economy and portrays the Indians during Colonial times. Considering that we are dealing with a handbook, these last articles, however, give a completely satisfactory picture of modern Indian culture in western South America and its development after the Spanish Conquest. They also show what a fertile field awaits the research worker here.

The influence of central Andean culture has pushed to-

[17] Erland Nordenskiöld, "Arkeologiska undersökningar i Perus och Bolivias gränstrakter 1904–1905," *Kungl. Svenska Vetenskapsakademiens Handl.*, Vol. 42, Pt. 2, Uppsala and Stockholm, 1906.

[18] Juan de Solorzano Pereira, *Politica indiana*, Madrid, 1647; new edition recently published by the Compañia Ibero-Americana de Publicaciones, Madrid.

wards the south in two ways. Through Quebrada de Humahuaca, it has reached northwest Argentina; via the Loa valley, it has reached northern Chile. The southernmost traces of this influence can be seen among the Araucanians, the only peripheral Andean-culture people in the south who have survived the appearance of European civilization, and who besides have held to a part of their original culture. Professor John M. Cooper describes the Araucanians as well as their nearest neighbors and culture kinsmen among the southern hunters, the Patagonian and Pampean Hunters. Of articles in the *Handbook* dealing with surviving groups of Indians within the Andean sphere of culture, Professor Cooper's on the Araucanians is the most exhaustive.

Junius Bird has recently undertaken significant archaeological research work within the Chilean archipelago district and along the Pacific coast of northern Chile, from Arica in the north to Coquimbo in the south. The splendid results of this research work are presented to the reader in two comprehensive articles: "The Cultural Sequence of the North Chilean Coast," and "The Historic Inhabitants of the North Chilean Coast." In connection with the culture of the inland Indians of northern Chile—the Atacama Indians—we meet again the author Wendell C. Bennett. Here as well, there are only one or two stray works that have escaped the notice of the author: Skottsberg's *Notes on the Old Indian Necropolis of Arica*,[19] Bodman's article drawing attention to the first certain case of real embalming in South America in this connection,[20] and Plageman's work on rock-carvings.[21]

It is pointed out that the Atacama Indians were to a very great extent a trading people. It would have been appropriate to stress this by mentioning the discovery of leather cuirasses of alligator and monkey skin, and pouches of nasua skin,[22] which indicate widespread trade connections with the tropic and subtropic districts east of the Andes. The articles illustrated on Plate 134, *o* and *p*, for the use of which no explanation is given, are protecting cases for feathers. A similar article in the Gothenburg Museum collections, as a matter of fact, contained the remains of feathers when discovered.

South American archaeological research first began in Argentina. Therefore it is quite natural that the Andean marginal cultures in northwest Argentina are mainly discussed by Argentine archaeologists. Eduardo Casanova has composed the article "The Cultures of the Puna and the Quebrada de Humahuaca"; Fernando Márquez Miranda, the two on "The Diaguita of Argentina and the Chaco Santiagueño Culture"; and Francisco de Aparicio, the chapter "The Comechingon and Their Neighbors of Sierra de Cordoba." Only two non-Argentine names are to be seen here: Samuel K. Lothrop, who gives an account of the Diaguita culture in Chile, which in recent years has attracted growing attention; and Gordon R. Willey, who was entrusted with a synopsis on the main features of the culture of La Candelaria. In regard to the number of pages, these articles are among the shorter ones in the *Handbook*, but in their condensed form they give a very good portrayal of the cultures in question. Worthy of special mention is Márquez Miranda's synopsis of the Chaco-Santiagueño culture, which here as well as in Volume II of *Relaciones de la Sociedad Argentina de Antropología*[23] has become the object of an analysis based on facts. Unfortunately, this article is altogether too concentrated in the *Handbook*. One who has had the opportunity of seeing collections from this district misses, for example, illustrations of the interesting articles made of bone. The absence of illustrations and maps of the centers of settlement is also felt in the articles on the Diaguita and Quebrada de Humahuaca districts.

To the north, Ecuador lies within the boundary of the Inca Empire, but its incorporation took place rather late, hardly a generation before the Spanish conquest. The geographical structure of the land is another reason why here, as in the Peruvian coast district, we have a number of differing cultures over which the Inca influence lies like a thin veneer. Ecuador is given two articles in the *Handbook*. Donald Collier treats of the "Archaeology of Ecuador" and John Murra, of the historic tribes, giving in this connection an excellent account of Colonial and Modern conditions in Ecuador. To a certain extent one regrets this division of the subject. Information on the archaeological finds from one district should have been followed by information on the historical tribes in the same district.

The northernmost part of the Andean culture region, Colombia, has been treated according to the same lines as Ecuador. Bennett gives an excellent introductory general survey of the archaeology of Colombia. In this he supports his statements not only from investigations already published, but by personal study of private collections in Colombia. As a result, his contribution becomes somewhat more than a general survey of the results of research as in the other parts of the *Handbook*. Two of the regions touched on by Bennett are also discussed in separate articles. The archaeology of San Augustin and Tierradentro are treated in a special chapter, written by Gregorio Hernandez de Alba, and A. L. Kroeber gives an excellent account of the Chibcha culture. The Popayan region is discussed in several pages by Henri Lehmann. Two of these authors reappear in connection with accounts of the tribes referred to in the literature of the Conquest and Colonial eras, and of the Indians of our day. Hernandez de Alba gives a description of the Highland tribes of southern Colombia, a description which, like those of the Aymara and Quechua Indians, must be considered an excellent pioneer work, and Lehmann treats of the Moguex-Coconuco. Sergio Elias Ortiz contributes two shorter articles in this connection, one on the native tribes and languages of southwestern Colombia and the modern Quillacinga, etc., while Willard Z. Park in conclusion gives an account of the culture of the Santa Marta Indians of Sierra Nevada. However, such an important work as Jose Perez de Barrado's *Arqueología Augustiniana*[24]

[19] Carl Skottsberg, "Notes on the Old Indian Necropolis of Arica," *Meddelanden från Geografiska Föreningen i Göteborg*, Vol. 3, pp. 27–78, Gothenburg, 1924.

[20] Göita Bodman, "Untersuchung eines Balsamierungsmittels aus Gräbern in Arica (Chile)." *Ibid*. Vol. 3, pp. 79–86, Gothenburg, 1924.

[21] A. Plageman, *Über die chilenischen "Pintados,"* Stuttgart, 1906.

[22] Stig Rydén, *Contributions to the Archaeology of the Río Loa Region*, Gothenburg, 1944, p. 108.

[23] Various authors, "Los aborigenes de Santiago del Estero," *Relaciones de la Sociedad Argentina de Antropología*, Vol. 2, Buenos Aires, 1940.

[24] José Perez de Barrado, *Arqueología Augustiniana*, Bogotá: Biblioteca de Cultura Colombiana, 1943.

is not at all referred to, in spite of the fact that other works published as recently as 1944 are included. One notices also the absence of Nordenskiöld's and others' interesting investigations of Colombian tools of gold alloy.[25] Likewise it is to be regretted that Bolinder's collections from excavations in the Santa Marta region have not been made public, but are known only through the vessels published by J. Alden Mason. Another unpublished collection in the Gothenburg Museum, chiefly from Quimbaya and Caldas, could have enriched in many respects the account of Colombia's antiquity. In this connection one might express a wish that the *Handbook* contained a catalogue of the various museums and institutions of both continents which possess collections from South America. Perhaps the world's political conditions can be blamed for this lack.

It is quite natural that, in a work of the imposing size of Volume II of the *Handbook of South American Indians*, some minor details of information can always be found to be in error, or that omissions have been made. Only new investigations can change the main lines of this work. The *Handbook* is, as a handbook should be, remarkably free from theoretical speculations. In its present form it is a brilliant result of the work of various research workers, a book which, since the publishing of Hodge's *Handbook of North American Indians*, has been longed for by all Americanists, and which is now welcomed with gratitude to the institution which made its appearance possible. The best compliment that can be given the *Handbook of South American Indians* is a wish that the three remaining volumes may soon be ready for distribution, and that we may soon see in print a similar work on Central America and Mexico.

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[25] Erland Nordenskiöld, "Origins of the Indian Civilizations in South America," *Comparative Ethnographical Studies*, No. 9, Gothenburg, 1931.

The Sinagua: a Summary of the Archaeology of the Region of Flagstaff, Arizona. HAROLD S. COLTON. Bulletin, Museum of Northern Arizona, No. 22. Flagstaff, Arizona, 1946.

In this monograph, Dr. Colton brings together the data on which his concise outline of "Prehistoric Culture Units and their Relationships in Northern Arizona" (*Bulletin, Museum of Northern Arizona*, No. 17, 1939)[1] was based, and restates his principles, procedure, and major conclusions.

The introductory chapters cover: archaeological expeditions in the Flagstaff area; ecology or geography (physical environment), geology and physiography, water-supply and climate, forest types; archaeological survey methods; possible preceramic sites, with a crude lithic industry, in the Little Colorado Valley, quoting Katharine Bartlett;[2] the focus-branch-root system of classification of archaeological material, and the five branches meeting in the Flagstaff area; ceramic groups (assemblages of contemporary types), and index wares (sequences of utility pottery distinguished by materials and techniques); the discrepancies between Gladwin's tree-ring dates and those obtained by McGregor and Douglass.

The major part of the book (210 pages) consists of a summary of the available data on over 100 excavated or partially excavated sites—the field work, aside from surface-sherd survey, of the Museum of Northern Arizona (and, in a few cases, of others) over the past thirty years. The sites are arranged merely by their serial numbers in the Museum of Northern Arizona survey, ranging in the Flagstaff area from NA 72 to NA 3996. As it happens, these are the latest and earliest sites, respectively, in the immediate vicinity of Flagstaff—Old Caves Pueblo, the only site west of Winslow and north of Anderson Mesa yielding pottery of the fourteenth century (Winslow Polychrome and Jeddito Black-on-Yellow); and Cinder Park, a brownware site of the seventh century (Lino Black-on-gray, and a sherd of Santa Cruz Red-on-buff of the "Colonial" Hohokam). For each site, the information is given in this order: location and geographic situation, excavations, architectural features and drawings, tree-ring data, analysis of pottery by type and ware, conclusions on period of occupation, and assignment to branch and focus.

The third part of the report, entitled "Synthesis," deals with the following topics: the dating of pottery types and dated ceramic horizons; one-to-one correlation of index wares (utility pottery) and branches; date of eruption of Sunset Crater, as recently determined;[3] distribution of branches (that is, occurrence of index utility wares) in the area between Flagstaff and the Little Colorado River (a district about thirty miles west-east and south-north), shown by a series of six maps for periods from the seventh century to the fourteenth; architectural types associated with each focus; tables of correlation of pottery complex and house type; summary of other artifacts (also tabulated by focus in Appendix 1); burials; cranial deformation and physical type (especially brief chapters); problems and pitfalls of stratigraphy, which is found to be of little value in the Flagstaff district except at the large sites; frontiers and barriers between cultures, and "crises" of cultural interchange or population movement; the Verde Valley and its Hohokam and Sinagua sites; the differentiation of the Cohonina and Sinagua branches, based primarily on the distinction between "Alameda" brownware of the Flagstaff area and "San Francisco Mountains" (Deadmans) grayware of the Coconino Plateau; summary of the history of Sinagua culture.

Dr. Colton has presented a great amount of data, and the major conclusions which he has reached after years of study of Flagstaff archaeology. The arrangement of topics could perhaps be more convenient, but is in general quite proper. Far more detail would be desirable on material culture other than pottery and architecture, and on physical type and cranial deformation. A separate chapter on the revised date of eruption of Sunset Crater seems unnecessary and breaks the continuity of discussion. Minor flaws of the nature of typographical errors are comparatively few.

The obvious question in reviewing this book is, has Dr.

[1] Reviewed by the present reviewer, AMERICAN ANTIQUITY, Vol. 6, pp. 189–92, Oct., 1940.

[2] K. Bartlett, "Notes on a Primitive Stone Industry of the Little Colorado Valley," *Plateau*, Vol., 14, pp. 37–41, Flagstaff, 1942.

[3] H. S. Colton, "A Revision of the Date of Eruption of Sunset Crater," *Southwestern Journal of Anthropology*, Vol. 1, pp. 101–26, Albuquerque, 1945.

Colton answered fully and convincingly the recent attack[4] on the whole Flagstaff system? Evidently Dr. Colton prefers to let the facts speak for themselves, as he refers occasionally to Gladwin's criticisms but, in general, simply indicates the pertinent data without answering point by point. What the facts say—whether Colton's defense is adequate—is not an easy and obvious matter.

Anyone with an inclination to neat and orderly arrangement by refinement of classification and subdivision, like Colton's, can, if not very critical, easily accept and follow his classification, with only occasional qualms; yet—Gladwin is logical, as well as quick-minded and imaginative, and writes very persuasively; anyone searching for the quick and easy way out will follow him. Although no doubt Dr. Colton over-complicates things, surely Gladwin is over-simplifying them.

On the one point which Dr. Colton does take up specifically, he is convincing: at the one site, tree-ring specimens from which are significantly differently dated by Gladwin and by McGregor, the pottery fits the late date of 1115 A.D.—"Using Gladwin's own test for the validity of a date, i.e. agreement with the archaeological evidence, we believe McGregor's dates to be correct."

As to the facts speaking for themselves—anyone reanalyzing the data for himself is likely to end up in a highly confused condition. I have repeatedly tried rearranging sites and components by pottery-complex, by architecture, by both in combination; using only dated sites, or using only pure sites of distinct ceramic horizons, or using those assigned by Colton to certain foci—and I land in a muddle every time, frequently with even more separate foci than Colton gives.

The major problem is the question of the distinctness of the "Cohonina branch" of a period between 700 and 1200—distinctness of the Coconino focus and Medicine Valley focus from the corresponding foci (Sunset and Rio de Flag) of the Sinagua branch. The earliest horizon and the late horizons are more unitary, offering comparatively few complications, and Colton's classification, terminology, and interpretation can be accepted with only minor quibbles.

That the Sinagua branch "exists" and is entirely separate from the Kayenta branch (western San Juan Anasazi) is unquestionable: "If we accept the Mesa Verde and Chaco as separate branches, then the Sinagua is distinct from the Kayenta branch many times over." In the Flagstaff-Verde area, there are no circular kivas, inhumations are extended, stone axes are ¾-grooved, and the characteristic pottery consists of polished brownware. These are important differences from Anasazi culture.[5]

Considerable amounts of Kayenta pottery—black-on-white, black-on-red, plain and corrugated gray—occur in Sinagua sites, and are readily explained as trade from the nearby Anasazi sites on the west side of the Little Colorado. For some reason, the Sinagua-Kayenta frontier was not at the river but about ten miles from it, not corresponding to any geographical barrier.

But the distinctness of the Cohonina branch, characterized by Deadmans Gray pottery, is less clear. This is true primarily in the Flagstaff area proper. The Pittsberg site, 35 miles west of Flagstaff, forms a recognizably separate focus: masonry two-room surface granaries and fort; irregular surface-cleared huts; platform-type metates; slender triangular points (not stemmed or notched as are Sinagua and Kayenta points); Deadmans Gray, Tusayan Corrugated, Black Mesa Black-on-white, Deadmans and Tusayan Black-on-red; no burials found; no dates obtained, but of the period 950 or 1050 to around 1100. With this firmly in mind, the high percentages of Deadmans Gray in the Baker Ranch and Medicine Valley sites and the occurrence of masonry surface structure along with pit-houses certainly seem to represent a distinct cultural influence—call it Cohonina—although possibly not actual components and foci.

Possibly Gladwin's terms "Coconino phase" and "Medicine Valley phase" could be retained in practice for the slightly larger groupings—each subsuming a contemporaneous pair of Colton's foci of separate branches, and forming a convenient repository for mixed sites of the periods equivalent respectively to Pueblo I and Pueblo II. Then, for example, within the "Coconino phase" those who wish to make finer distinctions can separate out a "Baker Ranch focus" and the "Sunset focus"; and within the "Medicine Valley phase" distinguish a "Deadmans Mesa focus" from the "Rio de Flag focus."

The sites in question are all pretty similar in a broad way—but there are apparently valid distinctions between certain sub-groups—yet the intermingling of traditions and influences is so complex that no picture can be drawn, with sharp lines between classificatory groupings.

This is, I realize, primarily a technique for evading the issue and avoiding decisions. Yet I believe it would be genuinely helpful, as a means of talking more nearly the same language. And it is partly a matter of terminology: I note with considerable interest Gladwin's reference to sites at the Grand Canyon airport which "looked like the Baker Ranch variety of Pueblo I."[6]

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[4] Harold S. Gladwin, "A Review and Analysis of the Flagstaff Culture, and Problems of Dating: I, the Medicine Valley Sites," *Medallion Papers*, Nos. 31 and 32, Globe, Arizona: Gila Pueblo, 1943 and 1944.

[5] Cf. E. K. Reed, "The Diagnostic Features and Distribution of the San Juan Anasazi," *Southwestern Journal of Anthropology*, Vol. 2, pp. 295–305, Albuquerque, 1946.

[6] Harold S. Gladwin, "Problems of Dating: II, the Tusayan Ruin," *Medallion Papers*, No. 36, Globe, Arizona: Gila Pueblo, 1946.

Tree Ring Analysis, Problems of Dating: II, the Tusayan Ruin. HAROLD STERLING GLADWIN. *Medallion Papers*, No. 36. Globe, Arizona: Gila Pueblo, January, 1946. 21 pages, 14 figures.

This paper is the third of a series[1] in which Dr. Gladwin has questioned the accuracy of tree-ring dates for certain ruins within the Southwest. Gladwin stresses his conviction "that the archaeological evidence of pottery and architecture must be the primary guides in determining the period of a ruin. Once this has been established, tree-ring dating can be of great value in providing a more exact chronological position, but there can be no justification for subordinat-

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[1] H. S. Gladwin, "A Review and Analysis of the Flagstaff Culture," *Medallion Papers*, No. 31, Globe, Arizona: Gila Pueblo, 1943; H. S. Gladwin, "Tree-Ring Analysis. Problems of Dating. I, the Medicine Valley Sites," *Medallion Papers*, No. 32, Globe, Arizona: Gila Pueblo, 1944.

ing the tested value of archaeological evidence to the questionable authority of a tree-ring date." In view of the conflicting evidence between tree-ring dates and the archaeological picture, which is based primarily on pottery and architecture, Gladwin has re-examined the tree-ring dating of specific sites in the northern Arizona region in order better to understand why this variation occurs. Applying his own method of correlation for establishing tree-ring dates,[2] Gladwin has discarded the former dates for the ruins in question and has assigned new ones which appear to be more in harmony with the archaeological evidence.

This particular report is concerned with the Tusayan Ruin, a small masonry pueblo consisting of four or five contiguous rooms, two kivas, and several storage rooms. The Tusayan Ruin is located along the south rim of the Grand Canyon about 50 miles to the north of the Flagstaff region. The architecture and associated pottery suggest that this site "provides an unusually clear illustration of Pueblo II developing into Pueblo III in this region." Haury has assigned dates of 1170+X to 1205+X to the Tusayan Ruin which would place this site as contemporaneous with or later than other well developed Pueblo III sites to the south, east, and north (Oak Tree House at Mesa Verde, Wupatki, Aztec, Pueblo Bonito, etc.). This late dating for what appears to be an early Pueblo III site has been explained by the suggestion that the Tusayan site was peripheral to the culture center and, hence, lagged in development. Gladwin is unwilling to accept this explanation and has sought instead to re-date the site and to place it at a time period which would be earlier and more in agreement with the archaeological picture.

There are six charcoal fragments (pine and pinyon) from the Tusayan Ruin, and, with the exception of one piece, Gladwin agrees with Haury on the cross-dating of these specimens. The major difference in opinion arises from the correlation of this floating chronology with the master chart. Haury dates the outside rings of these specimens from 1170 to 1205, and Gladwin dates them from 1054 to 1073, a difference of from 115 to 134 years.

Gladwin states that his revised dates are more in agreement with the archaeological evidence and that their acceptance requires a revision in the general archaeological interpretation for the western section of the Pueblo area. He suggests that the error in the previous dating may have been a result of using either an inadequate master chart or one which was inappropriate to the specific region. In view of such an error having been discovered in the dating, he is of the opinion that other sites may be incorrectly dated and that a re-examination of all dates, records, charts, and composites (master charts) should be undertaken in order to establish and verify accurate dating for all sites in the Southwest. Gladwin himself has initiated such a study.

The report under consideration here not only offers a revision of the tree-ring dates formerly assigned to the Tusayan Ruin, but it is an attack upon the Douglass method of tree-ring dating. The disagreement concerning actual dates and the questioning of accuracy in standard methods of dendrochronology is a serious matter for the archaeologist. Not only is he presented with the dilemma of choosing between two suggested conclusions in regard to actual dates, but his suspicions and doubts concerning dendrochronological results as a whole are aroused. When much of our understanding of Southwestern archaeology is clarified by tree-ring dating and the chronology it offers, criticisms of these data are of startling significance. I do not suggest that the questioning of this basic material is an unhealthy attitude, but rather I disapprove of such developments as can place dendrochronology in bad repute. Many archaeologists have not had sufficient training in tree-ring analysis so that they can properly evaluate conclusions concerning the accuracy of tree-ring dates. Since this is the case, it appears worthwhile to examine the materials which have precipitated the present situation and to consider the validity of the results obtained.

The present differences in opinion concerning the tree-ring dates assigned to certain sites are the result of applying two methods of cross-dating. Gladwin encountered certain difficulties in applying the Douglass method of analysis and has developed what he considered to be a more objective and refined method. This method of correlation has been presented in *Medallion Papers*, No. 28. Using this method in assigning dates to specific sites, Gladwin obtained dates which were different from those presented earlier by other individuals using the Douglass system. On the basis of archaeological evidence and the revised dates, which appeared to be more in agreement with the general archaeology, Gladwin concluded that the dates formerly assigned to these sites were erroneous and that the Douglass method of cross-dating was unreliable.

Since the final results are based upon the method of correlation which Gladwin has devised, it is necessary to examine this procedure in order to evaluate his conclusions.

Douglass has pointed out that charcoal specimens which have had the ring record exposed by abrasion or by an abrasive blast such as is used by Gladwin, cannot be trustworthy.[3] With this method of preparation, the ring identity is based upon hardness rather than cell structure, shape, and color; consequently, the record becomes unsuitable for cross-dating. Microscopic rings may remain obscure and are often not seen at all. Douglass states that "a careful examination of a considerable number of such surfaced specimens, perhaps 150, showed not a single case in which a trustworthy ring reading could be obtained."[4]

Gibson, in a recent brief communication, has pointed out four serious criticisms which can be made of Gladwin's method.[5] One example is presented in Gibson's paper to show that two specimens which obviously do not reflect similar climatic conditions offer a perfect correlation or percentage of agreement. When such potential errors are capable of providing a high index of correlation, the cross-dating procedure can hardly be accepted as accurate.

In order to illustrate how some of these objections can

[2] H. S. Gladwin, "Tree-Ring Analysis, Methods of Correlation," *Medallion Papers*, No. 28, Globe, Arizona: Gila Pueblo, 1940.

[3] A. E. Douglass, "Precision of Ring Dating in Tree-Ring Chronologies," *Laboratory of Tree-Ring Research*, No. 3, Tucson: University of Arizona, July 1, 1946, p. 9.

[4] *Ibid.*, p. 9.

[5] Gordon D. Gibson, "On Gladwin's Methods of Correlation in Tree-Ring Analysis," *American Anthropologist*, N.S., Vol. 49, No. 2, 1947, pp. 337–40.

effect the final result, some of Gladwin's original data might be examined. According to the Gladwin method, the composite of five specimens (353, 354, 355, 356, 358) from the Tusayan site when correlated from 1003 to 1073 A.D. gives a percentage of agreement for the Lukachukai district of 87% and for the Chaco district, 84%. This composite when correlated by the same method at Haury's dates, 1118 to 1188 A.D., gives a percentage of agreement of 54% for the Lukachukai district and 58% for the Chaco district. Since the highest percentage of agreement occurs at the 1003 to 1073 dates, Gladwin has suggested that this is the correct correlation.

If one calculates the percentage of agreement between various individual specimens used in preparing this composite, the index of correlation is less impressive than that mentioned above. The percentage of agreement for individual specimens, as figured from Gladwin's charts on page 11, offer the following results:

Cross-dated specimens	*Percentage of agreement*
353 and 358	49%
353 and 356	63%
353 and 355	76%
354 and 355	63%

Although the cross-dated composite offers a higher percentage of agreement than any of these listed here, these correlations must be acceptable to Gladwin since he has apparently considered the cross-dating at these points as accurate and established.

The acceptance of such a low percentage of agreement as accurate becomes important when one considers that in some cases a higher index can be demonstrated by a false correlation. A single specimen, number 358, when correlated at Gladwin's dates from 1030 to 1072 on the Chaco composite gives a percentage of agreement of 67%. This same specimen, number 358, when correlated from 1894 to 1933 on a modern specimen, number 716,[8] gives a higher percentage of agreement with a 76% correlation. Certainly when, as in this case, a false correlation produces a higher percentage of agreement than that offered by the dates as set forth by Gladwin, the dates obtained by this method cannot be accepted as accurate.

The fact that Gladwin's method could result in erroneous dating was first realized when an attempt was made to apply his procedure to Mississippi Valley materials. In several cases, when working with modern specimens of known cutting date, a false correlation produced a higher percentage of agreement than that offered by the correct cross-date. Such errors when using Gladwin's method of correlation are the result of ignoring neutral rings, the manner of evaluation of agreements, and other faults which Gibson has pointed out.

Since, as has been demonstrated, the Gladwin method of cross-dating ring records can result in erroneous dating, it appears advisable to adhere, for the present, at least, to the standard Douglass method of analysis. Gladwin's desire to produce a more objective method and to express the degree of cross-dating by means of some index is certainly to be commended. His method of correlation as defined in *Medallion Papers*, No. 28 is premature, however, and contains many defects which make it unreliable for tree-ring dating. Perhaps the elimination of various troublesome factors and a thorough testing of some revised method would present the dendrochronologist with an extremely useful tool. In the meantime, Gladwin's suggested dates can only be accepted as hypothetical.

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[8] H. S. Gladwin, "Tree Ring Analysis, Methods of Correlation," *Medallion Papers*, No. 28, Globe, Arizona: Gila Pueblo, 1940, p. 39.

The Upper Missouri River Valley Aboriginal Culture in North Dakota. GEORGE F. WILL and THAD. C. HECKER. North Dakota Historical Quarterly, Vol. 11, Nos. 1 and 2, pp. 5–126, January–April, 1944.

A report which summarizes some 40 years of reconnaissance and research in the remains of the great earth-lodge villages along the Missouri River near Bismarck, North Dakota, becomes an important contribution *per se* to the literature of Plains archaeology. Will and Hecker, in the study under review, have reworked much valuable material included in the excellent earlier studies by the senior author. These core data have been augmented by the results of recent researches by both men, and have been supplemented by the reports of field work carried on under the auspices of the North Dakota State Historical Society. The following statement carries a suggestion that a substantial part of these additions may be credited to the junior author.

> We have, thanks particularly to the archaeological work carried on for the Historical Society by Mr. Hecker, been able to enlarge our knowledge of the Mandan people far beyond anything previously known (p. 5).

The first 70 pages of this study are devoted to a general discussion of the ethnohistory and archaeology of the Missouri River Valley in North Dakota and in northern South Dakota, with a few brief reports of surveys made elsewhere in North Dakota. Summary statements of site excavations are found throughout this section, but the emphasis is on ceramic typology and on the assignment of sites and artifact complexes to historic tribes.

A list of some 145 village locations occupies pages 75 to 118, inclusive. These sites are listed in order as they are found along the Missouri River from south to north. The locations on the east side are given first, followed by the much longer list of sites on the west bank. The legal description of the location is given, and brief but valuable comments on the archaeology are given for nearly every site. A second list, which groups these same sites by cultural periods, occupies the remaining pages. A bibliography is appended, and there are 17 plates, including a frontispiece.

The authors, in addition to this valuable descriptive material, offer a new synthesis of their Mandan data. Four periods are recognized, the Archaic Mandan, the Middle Mandan, the Later Heart River, and a final Decadent Ceramic period associated with the increasing white contacts after 1750.

In the earliest of these periods, the authors envisage:

> . . . a very primitive people coming into the Missouri Valley in Dakota, building many villages, widely over the area, making some pottery and practising simple agriculture (p. 6).

The distinctive ceramics of these Archaic Mandans is described as follows:

> The pottery of these earliest sites was rather primitive ware, showing simple decorations on plain rim types. Rim tops with incised or punched decorations predominated with the balance of the pot smooth surfaced. A small proportion of the pots carried lineate designs which later continues to be the characteristic of the Mandan culture. *The sherds of this primitive woodland type pottery show Mill Creek, Mitchel Site and Nebraska cultural traits and it is so primitive that relationship could be ascribed to many primitive cultures* [italics mine], showing straight rims with simple decorative designs on pots with constricted necks (p. 49).

The following statement discusses the two succeeding periods, the Middle Mandan and the Later Heart River:

> There is a striking difference between the primitive ceramics of the Archaic period and the advanced cultural phase of the Later Heart River period, and in spite of the seemingly gradual progression between those two time periods there is a fairly definite reasonably differentiated middle period shading into the other two at either end. The Archaic Mandan period covers the ceramics of those sites upon which the Mandan cultural development is based. The Middle Mandan period covers the ceramics of those sites which show that the Mandan ceramics had achieved definite individuality. The Later Heart River period was that in which Mandan ceramics had reached its peak before decadence due to white contact. *No hard and fast rule can be used in placing pottery from different sites in these three divisions as the cultural change was gradual and specimens from many sites would be earlier or later in the periods of this broad division* [italics mine]. However, distinct differences in village and lodge constructions seem to correlate with pottery changes (pp. 53–4)

The tentative and impressionistic character of this formulation is apparent, but consideration of the three plates which illustrate these ceramics lends support to the thesis. Full acceptance, of course, will await careful study of material recovered by actual excavation. This reviewer has discussed elsewhere[1] the possibility that this new sequence can be brought into harmony with the more fully studied Central Plains chronology. At the present time, such a correlation seems perfectly feasible, when more data from the important South Dakota sites become available, and it may well have salutary effects on both sets of hypotheses.

The post-war speed-up of the Missouri River development program has created an unparalleled emergency in Plains archaeology. For that reason, the publication of detailed information on so many archaeological manifestations located in a key area seems especially timely. The very urgency of the present situation, however, underlines, and may overemphasize as well, the unusual difficulties which are imposed on the reader by the lack of careful organization of the present study. This technical failure in presentation contrasts sharply with the professional finish of earlier studies by Will, but it makes a brief critical appraisal of these shortcomings seem unavoidable.

In general, the writing seems repetitious and discursive, and one can hardly escape the impression that a well-ordered over-all plan is lacking. The discussion entitled "Mandan Ceramics," for example, begins on page 46 with this sentence, "The Mandan, Hidatsa, and Amahami were people of Siouan linguistic stock." This statement initiates a consideration of ethnohistorical problems which continues to page 52, where the actual discussion of Mandan pottery begins.

There is no index and no table of contents, and the documentation of the text is hardly adequate. Five of the ten footnotes refer to Strong's recent report of his own researches in the archaeology of the same general area. It is disconcerting, then, to find that the Rygh site, which Strong excavated and reported, has been reclassified as Arikara, but without documentation or apparent consideration of the excavator's opinions. Strong's own conclusions were that,

> The major ceramic characteristics [of the Rygh site], however, accord far more specifically with the two early historic and protohistoric Mandan sites to the north.[2]

Confidence in the present study is not restored by the further comments that

> . . . as our visit to this site [the Rygh site] was for the sole purpose of gathering a sample of potsherds for comparison, little attention was paid to the site (p. 75).

The bibliography is short. The references are not in standard form, and they have not been arranged in alphabetical or other formal order. The classic ethnography, *The Mandans*, by Will and Spinden, is not included, and the senior author's own *Archaeology of the Missouri Valley* is missing as well.

The illustrative material is helpful, but is not wholly satisfactory. The site maps are not well drawn and lack scales although several of them were previously published, with scales, by Will in 1924. A more serious omission, perhaps, is the complete lack of cross-references between plates and text.

None of the culture complexes discussed can be much more than 500 years old. The utmost discretion is needed if such loaded terms as "primitive," "archaic," or "decadent" are applied to these relatively recent manifestations. There are other questionable usages. The word "stratified" is used frequently albeit with some lack of precision, as the following statements indicate:

> Clearing the bottom of this trench revealed fourteen posts and stakes and definitely showed that only one lodge had been built on the site, a favorable circumstance when stratifying a site (p. 20).
>
> Dr. Strong stratified a ten foot square in a dump at the Rygh site . . . (p. 46).

Close comparison of the several listings and site discussions brings out other minor inconsistencies and errors, but no purpose can be served here by merely multiplying these examples. It is apparent that careful editing might have eliminated the greater part of these difficulties. One can only deplore whatever circumstances permitted these keen insights and invaluable data to reach final publication in a form that makes them all but inaccessible.

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Archaeology of the High Western Plains. Seventeen Years of Archaeological Research. ETIENNE B. RENAUD. Denver: Department of Anthropology, The University of Denver, May, 1947. 135 mimeographed pages.

Despite the unqualified title, "This book concerns itself *exclusively* with our own work, without any attempt at co-

[1] John L. Champe, "Ash Hollow Cave," *University of Nebraska Studies*, N.S., No. 1, Lincoln, 1946, pp. 92–4.

[2] W. D. Strong, "From History to Prehistory in the Northern Great Plains," *Smithsonian Miscellaneous Collections*, Vol. 100, pp. 353–94, Washington, 1940, p. 379.

ordinating it with the research of others, whether done at some local points within the limits of our area, or in neighboring districts outside of it." Its purpose is to assemble and coordinate the information previously published in a series of special papers and progress reports in order to furnish a convenient summary of the major results of the field and laboratory work directed by Dr. Renaud. The field program consisted of surface surveys of habitation sites, apparently supplemented by some test pitting, collection of data on pictographs and petroglyphs, and excavation at a few sites in western Oklahoma and New Mexico. Parts of South Dakota, Nebraska, Wyoming, Colorado, Oklahoma, and New Mexico were included in the survey. The publication is divided into four parts, preceded by a foreword and followed by a short conclusion. Part I describes the field activities chronologically; Part II discusses "Sites and Artifacts"; Part III, "Petroglyphs and Pictographs"; and Part IV, "The Cultures." In Part IV five distinctive cultures are recognized, including the Western Camp culture, the Fumarole culture, the Black's Fork Typical and Peripheral cultures, and the Upper Rio Grande culture. A sixth described complex, the Sand Dune culture of the Black's Fork region, is thought to be a western variant of the Western Camp culture. In addition to these units Basket Maker and Pueblo manifestations in the Oklahoma Panhandle, New Mexico, and southern Colorado are described; the geographical relationship of Plains (Western Camp) and Pueblo cultures is discussed; and the author's earlier comments on the Folsom-Yuma problem are summarized.

The material presented is important because it deals with a neglected geographical area and because some of the cultures investigated may well represent comparatively early and poorly-known horizons. For this reason it is regrettable that the publication does not offer a concise and well-organized presentation of the cultures. This is particularly apparent in the discussion of the Western Camp culture, in which, for example, pottery is not mentioned, although the chapter on pottery in Part II indicates that "Plains pottery" was found on 158 sites in four states. Even in the case of a compact manifestation, the two excavated rock shelters of the Fumarole culture in northeastern New Mexico, there is no clear statement of the stratigraphic situation, although three occupation levels were noted. It is especially exasperating to read that one class of implements are of "... Lower Palaeolithic appearance, shape and technique, facts which suggest for them a greater antiquity than for all other specimens found associated with the Fumaroles," only to find that this inference is not accompanied by any statement of the stratigraphic position of the implements in question. On the other hand, a considerable amount of repetitious discussion offers additional obstacles to the reader. When these difficulties are combined with such features as the author's predilection for irrelevant comparisons with Old World lithic sequences and statistical analysis of the frequency of stone artifact types on a regional basis, plus a general lack of integration of the various parts of the text, the net result approaches obfuscation.

Aside from these flaws, which prevent a full attainment of the announced and modest objectives of the publication, a point of fundamental importance arises. After 17 years of field and laboratory research and 59 publications "relating to the subjects of this report" a judgment is due as to whether or not Dr. Renaud's intentions towards American culture history are "honorable." A regional archaeological program of professional caliber cannot be guided by individual preferences in research topics. The investigator is required to consider pertinent concepts and methods developed by other workers, and failure to do so can only be interpreted as dilletantism. If the University of Denver Archaeological Survey is to be regarded as a fully responsible and productive research agency, future publications must as a minimum furnish lucid and complete cultural summaries, prepared in a form suitable for integration with related areas.

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An Album of Maya Architecture. TATIANA PROSKOURIAKOFF. Publication, Carnegie Institution of Washington, No. 558. Washington, 1946. Unpaged, 36 plates. $10.00 unbound.

This handsome album presents 36 plates of perspective drawings of Maya ruins at the sites of Copan, Uaxactun, Tikal, Piedras Negras, Palenque, Xpuhil, Sayil, Labna, Kabah, Uxmal, and Chichen Itza. The project was conceived by Sylvanus G. Morley after viewing Miss Proskouriakoff's drawing of the Acropolis at Piedras Negras. Her work has benefited not only from the continued association with Morley and Satterthwaite but also from information and data supplied by other Maya students, by her architectural colleagues, and her own visits to some of the sites. The volume is a happy blend of archaeology and architecture in the tradition of Catherwood, Holmes, Totten, Marquina, and others.

There is a map of the Maya area with drawings of outstanding buildings to indicate the location of the illustrated sites. An introduction contains a few words about the calendrical system and then follows Morley's interpretation of Maya history. The purpose of the volume is to "present restorations of single buildings and of parts of ancient Maya cities, and is designed especially for those who wish to get a general impression of the architecture without laboring through scientific reports." Because the reproductions were based on reasonably valid evidence it is clear that the presentation is mainly of the later periods and of sites sufficiently preserved or excavated to enable accurate delineation of the structure. There is a brief statement of the influence of limestone mortar on Maya architecture and on the general architectural features of Maya buildings.

The title page of each plate carries a few references dealing specifically with the subject matter of the plate; additional general references are given in the introduction. There is also a brief descriptive statement of the subject matter of each plate. A thoughtful addition with each plate is a line sketch giving the present condition of the ruin with solid lines indicating the present structure and broken lines the ruined or buried features. This is a valuable aid

not only to understand the proportion reconstructed from subsidiary information but it also helps one to realize the scholarship which made the completed drawings possible. Some of these plates have already been published and many will undoubtedly be reproduced again but in this format they appear to excellent advantage and are accompanied by a restrained and adequate text.

All of the plates are worthy of praise. Particularly impressive are the series presenting the sequence of structures at Piedras Negras K-5 and Uaxactun A-V. In these Miss Proskouriakoff has utilized the excavation data to portray the modifications and increasing size and complexity of the structures as Maya culture developed at these two sites.

In addition to the architectural reconstructions there are drawings of certain clay and stone figures and other features which were either incorporated into the building detail or obtained from the sites, which provide added insight into the artistic skill of the Maya. These illustrations accurately reproduce these objects and their protrayal is not beclouded by the author's own individual style.

The format and binding of the volume are a fitting accompaniment for the reproduction of these excellent architectural drawings.

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Concepts and Structures of Maya Calendrical Arithmetics. LINTON SATTERTHWAITE, JR. Joint Publications of the Museum of the University of Pennsylvania and the Philadelphia Anthropological Society, No. 3. Philadelphia: University Museum, 1947. vii+168 pages, bibliography, 82 computations and tables.

The "tun arithmetic" required for handling Maya calendar counting involves a modified vigesimal system, the study of which has become a specialty. This paper "is in the main a study of . . . cyclical structures, used primarily for calculation purposes," and it is limited to such as might have been Maya methods.

In the codices are presented tables of successive cycle multiples. These permit the equivalent of multiplication and division, involving merely addition and subtraction. The chief advantage of Maya written numbers lies in the explanatory hieroglyphs which may accompany the record.

The Venus Table of the Dresden Codex "speaks most clearly for itself" as a point of departure. "The basic simple calculation procedures applicable to it, were surely known to the ancient Maya."

Sections II–IV are supposed to refresh the student's memory respecting the Maya time system as now known.

Section V discusses place-value calculation, and numeration with zero, which "acts as a place indicator, when a place would be empty otherwise." In the codices symbols resembling empty shells (or counter receptacles), mark each "place" devoid of counters. Just as 0 marks each empty column in our Arabic decimal numeration, the use of a zero makes possible place-values.

If in place of "first" the term "zeroth" were used, some confusion might be avoided, now due to our unfortunate and needless mixture of the concepts elapsed time and current time. Sections VI, VII, and VIII discuss in detail Maya usages mixing these two basic time concepts. Thus the absence of a Moon-number 1, may indicate current time moon-numbers, although moon-days were presumably counted in elapsed time.

On page 45 are tabulated several ways in which a shift in the counting base may have occurred in Yucatan. It is necessary to explain the difference between early and late practice, but there is no rigid proof because several different solutions are possible.

The 23 pages of Section IX are devoted to possible calculating procedures. For these many examples illustrate the several "rules." One paper should be added to the excellent bibliography: S. K. Morley, "On Computations for the Maya Calendar," *American Anthropologist*, N.S., Vol. 20, pp. 49–61, 1918. This paper bridges the gap between the 1901 methods of Bowditch and the 1939 modifications of C. Lizardi Ramos. It advocates the direct use of the time periods "expressed so far as possible in the Maya fashion."

Analysis of the various moon formulae occupies six sections, X–XV. Schram's straight line mean may be approximated in many ways only slightly different. Successful workability is not a necessary proof of having found the particular method peculiar to a site, because alternative methods may also achieve the same result.

Regular alternation of 30-day and 29-day moons gave a satisfactory average 29.5 days for two consecutive moons $59/2=29.5$, but required two half days or one full day correction every 34 lunations to keep up with the moon's average 29.53 days.

A half day correction was introduced by each 5-moon or 148-day group in the Dresden Codex lunar table, because $29.5\times5=147.5$, and this required merely the shifting of the moon-group partition in an otherwise unchanged alternation of 30–29 proving only one solution possible namely 30-29-30-29-30, beginning and ending in 30. A full day correction occurred when consecutive 30's raised the 6-moon group from the "normal" 177 days to 178 days.

In his *Maya Astronomy*, page 89, Teeple's Figure 18 shows how three zones of sun-eclipses are located on a 520-day double *tzolkin*. When almanac new-moons are plotted on the regular single *tzolkin*, 260-day background, and if the dates of sun eclipse and of moon eclipse midway between new moons are also marked, they fall into a pattern very like that of the 3-day periods of the codex table.

Many almanac eclipses were not visible in the Maya region, but such as were observed and recorded always fell within a 3-day limit. The three consecutive *tzolkin*-day periods, in addition to caring for inequalities in the moon's motion named the three days of moon disappearance in each of the 69 moon groups, during which sun eclipses had been observed.

Look out for a sun eclipse therefore on some one of the three tabulated days and for a moon eclipse fifteen days before or after. Past dates follow a pattern rather closely followed in the future. To the nearest day, any future new moon date lies at the intersection of four straight lines prolonged through the points marking the verified new moons of the past record. This method of graphical prediction,

adds another to the bewildering array of methods of calculation demonstrated and found to reach correct results.

Dr. Satterthwaite's voluminous treatise will be studied by all specialists interested in Maya mathematics and astronomy.

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Die Mexikanische Bilderhandschrift Historia Tolteca Chichimeca. Teil I: die Bilderhandschrift nebst Uebersetzung. K. TH. PREUSS and E. MENGIN. Baessler-Archiv, vol. 20, pt. 9. Berlin, 1937. 104 pages, 25 plates, and 148 text figures. 33.5 cm.

Historia Tolteca-Chichimeca. Liber in Lingua nahuatl manuscriptus picturisque ornatus . . . cum praefatione in lingua Britannica, Gallica, Germanica et Hispana. . . . Edited by ERNST MENGIN. Corpus Codicum Americanorum Medii Aevi, Vol. I. Copenhagen: Einar Munksgaard, 1942. xl+104 pages. 48 cm., 400 crowns.

Historia Tolteca-Chichimeca. Anales de Quauhtinchan. Edited by HEINRICH BERLIN in collaboration with SILVIA RENDON, with prologue by PAUL KIRCHOFF. Fuentes para la Historia de Mexico, Colección Publicada bajo la Dirección de Salvador Toscano, Vol. 1. Mexico, 1947. 127 pages, 25 plates. 23 cm., 35 pesos.

This is the story of the peoples whom the Spaniards found occupying the Valley of Puebla and northern Oaxaca State. Like the "Azteca" (more properly, Mexica), they overlaid elder civilizations (in this case Olmeca-Xicalanca), which are dimly reflected in the chronicle. If we shred away the countless details which obscure the story, the *Historia Tolteca-Chichimeca* tells how peoples of coastal affinities in the Valley of Puebla and nearby, were overrun and largely expelled by peoples of highland affinities and (probably) Nahuatl and Otomian speech.

In the eleventh century, when "the north crawled with tribes like knives in a shield," three bodies of Chichimec[1] migrated successively from the present state of Hidalgo to the regions named. The first emigrants were the Nonoalca-Chichimeca, who settled in northern Oaxaca; the second the Tolteca-Chichimeca, who invaded Cholula and its environs; and the third a group of seven tribes (all Chichimeca) which clustered eventually around the Cerro de la Malinche and formed the population Cortes found. One of these seven tribes tells the story.

The narrators, the Quauhtinchantlaca or inhabitants of Quauhtinchan, begin the story long before their own appearance in it, and carry it on to 1544, when the manuscript breaks off because of a lost page or pages. The antecedents of the principal action are handled with a real historical sense. The scene opens in Tula, Hidalgo, which (with Culhuacán, Mexico, as alternate capital) had governed vast ill-defined regions from the ninth to the twelfth centuries, declining after the expulsion of the famous priest-king whose rank was Quetzalcoatl and whose name was 1. Acatl.

The Tolteca and Nonohualca come from Colhuacan (another Colhuacan, semi-legendary, here called Colhuacatepec) to live together in Tula for the legendary period of one year. Then the Nonohualca abandon Tula because of rather spicy trouble with a foundling of the other tribe, the Tolteca. The two groups join to kill the troublemaker, and then the Nonohualca, bearing the relics of 1. Acatl Quetzalcoatl, emigrate across Puebla to the Mazatec zone of Northern Oaxaca, and sink out of sight.

The leaders of the Toltec, who figure again and again in this tale, are called Icxicoatl and Quetzaltehueyac. Fifteen years after the departure of the Nonohualca, they lead the Tolteca also from Tula, reaching Cholula, the fabulous shrine, and its great pyramid, Tlachialtepetl. Cholula is a center of tribes with coastal affinities (Olmeca-Xicalanca). After some time spent serving the natives of Cholula, the Tolteca offer a fiesta to their masters and borrow old spears and shields for a dance. When the natives are drunk, the Tolteca stage a *cuartelazo* and massacre over which the chronicler, descendant of the rebels, draws a patriotic curtain.

The *cuartelazo* brought on a general war with tribes akin to the Olmeca-Xicalanca, living on the southern slopes of Popocatepetl. To hold and consolidate their conquest, the Toltec leaders, Icxicoatl and Quetzaltehueyac, return to the place they had lived before occupying even Tula: Colhuacatepec. There they persuade the third group of emigrants, seven tribes of primitive bellicosity, to follow them back to Cholula as janissaries.

In 1174 the assembled hordes defeat the allies of the Olmeca-Xicallanca and are rewarded with lands surrounding the Cerro de la Malinche, thus:

Zacateca	Zacatlan de Manzanas
Tzauhteca	Tzauhtla
Texcalteca	Tlaxcalla (sic: Texcallan is an old name for this center)
Acolchichimeca	Unidentified
Malpantlaca	Unidentified

The history of the Tolteca-Chichimeca in Cholula wends its own course thereafter, to reappear most notably in Cortes' Letters. In the same way, the further history of these five tribes is ignored by the chronicle, aside from noting a religious peregrination to Cholula. Nor do the Tolteca-Nonohualca reappear. The story thus narrows down to two tribes of the seven, the Totomihuaque and the Quauhtinchantlaca. The areas settled by them are carefully defined:

Totomihuaque and sub-tribes:	South and southeast of the present city of Puebla, as far as Izucar-Matamoros and Acatlan, and nearly to Tehuacan.
Quauhtinchantlaca and sub-tribes:	East and northeast of Puebla, from near Tehuacan, to far north of the Pico de Orizaba and westward to the Tlaxcallan frontier.

Kirchoff's map shows all this and more.

Later events are sketchily indicated. The Quauhtinchantlaca and perhaps other Chichimeca consolidated their gains over the Olmeca-Xicallanca with campaigns as far east as

[1] Chichimec: any of the nomadic groups living on the northern rim of the intensive agriculture area of Mexico, which they frequently invaded. The Chichimec wore skins, had no idols, subsisted on cacti and small animals, and spoke various languages. Their descendants continued to use the name proudly, long after settling down and becoming civilized (e.g., in Huexotzinco and Tlaxcalla).

Maltrata and Coscomatepec, on the slopes of Mt. Orizaba, and north to Tlatlauhquitepec. Mixtec groups swarm up from civil wars of Oaxaca, perhaps bringing with them the art of painting such manuscripts as these. Tepeyaca, which Cortes knew as the great city of the plateau, begins to wax in power, and Quauhtinchan to wane. Eventually, other eruptions overcome these once savage conquerors: a long time has passed, and the two divisions of the Azteca-Mexica (Tlatelolca and Tenochca) arrive in the Valley of Mexico and expand eastward, first as underlings of a greater power, and afresh as conquerors in their own right. By conquering some of the Seven Tribes, and failing to subdue others, the Mexica divide the ancient alliances. Half a century later, the Spaniards arrive to create their own problems, and the story breaks off in mid-sentence.

This history (like the *Anales de Cuauhtitlan* and many others) is a commentary on a lost pictorial manuscript, from which it copies occasional pictures. It was written under the stimulus of the fertile school of historical paintings which centered in the Mixteca. The manuscript we know is a precious copy of the middle sixteenth century. The original was pre-Hispanic, thought its date is something of a problem. The scribes of Quauhtinchan, as Kirchoff notes, must have learned the art of painting annals either from the Tolteca-Chichimeca (who had brought the Seven Tribes from Hidalgo), or from the Mixteca-Popoloca (who settled among them in Puebla). A map included in the manuscript (Facsimile, pp. 74–5, Spanish edition, Pl. 20) is painted in a more conservative style than the rest of the pictures and is clearly Mixtec in inspiration.

Since three editions of the *Historia Tolteca-Chichimeca* have now appeared (though only one translation, Preuss and Mengin's), it is well to ask which one the scholar or reference library should have. And since each contains something complementary to the others, the answer is inevitably, all three.

If we consider them chronologically, we find that the fundamental German *editio princeps* (1937) makes the text known and arranges original and translation in parallel columns for immediate checking—which neither of the others does. Whatever minor defects in paleography, translation, or arrangement of plates Mengin may have let slip, we must not forget that it is Mengin who has provided us with the material to refute himself through his invaluable editorial efforts—first the joint translation of 1937, and now the magnificent facsimile edition.

This latter is chronologically next (1942), though copies reached Mexico and the United States almost simultaneously with the Spanish retranslation of 1947. Imposing in format and beautiful in binding, it forms the first volume of a series intended to preserve faithful reproductions of the sources for the study of America's high native civilizations in case of a catastrophe, and to give fresh impulse to the enquiry into American languages and antiquities. It was, indeed, produced in the midst of a catastrophe: the Nazi occupation of Denmark. Each of the exquisite plates of the series (which may run to 50 volumes) unlocks new worlds, and we wish it great success. It is the Kingsborough of our times.[1]

The *Historia Tolteca-Chichimeca* is a curious mixture of commentary and vestigial paintings, copied from a pre-Hispanic original. There are no illustrations of post-Hispanic events, only text. As a consequence, the arrangement of these elements and even the blank spaces are significant in affording an idea of the lost original. Moreover, with the facsimile one can tell, for example, that illustrations were planned but not executed for certain pages, and that one map (which duplicates certain others) is an original piece, perhaps surviving from the prototype, in uncontaminated Mixtec style—an exquisite specimen of native drawing bound up with the Hispanicized copy of 1544. Only such an accurate reproduction of the precious manuscript could tell us these things. Quite apart from the matter of the paintings, by means of the facsimile we can now control the translation and correct those minutiae which are indispensable in the study of the laconic native texts—minutiae which only a study of various documents simultaneously can clear up and which no one could expect Dr. Mengin to translate perfectly in a pioneer version. The facsimile is essential to any reference library dealing in Mexican matters, and to as many scholars as can afford the rather stiff price. It is a great edition of major work.

Third in this tryptych is the Mexican edition of 1947. Like any translation of a translation, it has the errors of the first version plus a few original ones. It would be idle to compare details of this text with the facsimile and German texts, and to compile a solemn and lengthy erratum. What will have to be done eventually is to translate the work directly into Spanish, neglecting none of the suggestions of the three editions before us. Meantime, one may philosophize that the 1885 edition of the *Anales de Cuauhtitlan* was far less perfect and that it served for 50 years. The present re-translation makes the text known, in a practical sense, to a wide audience—among them, we hope, the inhabitants of Cuauhtinchan. "It can be bought at your nearest bookseller's." Also strongly in its favor is Kirchoff's suggestive introduction of 64 pages and his map of the itineraries of various migrations. Here Kirchoff polishes the jewel uncovered by Mengin. Format, paper, and impression are excellent.

It may be worth noting that a nineteenth manuscript copy and translation of the *Historia Tolteca-Chichimeca* exists in the Museo Nacional in Mexico City, and that the *Historia* is a mine which may be worked in for many years before all its recesses are explored.

R. H. Barlow
Fellow of the Guggenheim Foundation
Azcapotzalco-Mexicapan, D. F.

[1] Only the tiniest of details are open to criticism, none of them marring the vision of the project. Neither the English nor Spanish translation of the multilingual introduction is idiomatic; the sewing of this initial volume could be stronger; and finally (in this case, the Bibliotheque Nationale is responsible) such splendid plates should be made from photographs of originals not defaced by bits of old newspaper glued on them and covering the edges of text and drawings. Surely the Paris authorities are aware of the importance of the Goupil collection and are capable of caring for and restoring the manuscripts according to modern archive methods? These old mending jobs, probably from the hand of Goupil himself, hardly deserve perpetuation in facsimile.

NOTES AND NEWS

ARCTIC AREA

The University of Alaska has sponsored two field research projects in Alaska during the past summer. Louis J. Giddings, Jr. conducted archaeological and dendrochronological investigations on the Kobuk River and Kotzebue Sound, while Ivar Skarland made studies in the physical anthropology of Bristol Bay.

Erik Holtved of the Danish National Museum has been doing archaeological and linguistic research in the Thule district, northwestern Greenland. During the first part of the summer of 1946 he made a survey of Disco Bay, West Greenland, with reference to future work. He arrived at Thule in August and continued the excavations of Comer's midden, begun in 1935–37. During the winter he continued his linguistic and ethnological studies among the Polar Eskimo. In the summer of 1947 he investigated a newly discovered site, Nûgdlît, about 40 miles northwest of Thule. It is the largest known site in Greenland, and Holtved excavated about 30 of its more than 50 house ruins. The houses and the collections of over 1000 specimens from them indicate a culture very closely related to that of Ruin, which he investigated on his previous expedition. This is a Thule culture with a strong western stamp, and Helge Larsen reports that it is very like the western Thule phase which he identifies as succeeding the Birnirk phase in Alaska.

On the Danish Peary Land Expedition, which started its work in the summer of 1947, Count Eigil Knuth, one of the two leaders, was in charge of the archaeological investigations. He and his party spent 16 days on the south coast of Peary Land, and found six camp sites with tent rings on both sides of Brønlund Fjord. Of a dozen artifacts collected there, one was a Thule type arrowhead, and the rest were flint implements resembling those of the Dorset culture. The arrowhead was not found with the Dorset types. Count Knuth plans to spend the winter on Peary Land and the expedition will continue its work next summer.

Frederick Johnson reports that the Peabody Foundation at Andover has just received a small but very important collection of archaeological material from northern Quebec Province. The collection was made by Edward Rogers during a canoe trip to Hudson Bay from Oscelaneo, Ontario, via Lakes Mistassini and Albanel and Ruperts River, an area which has previously received no archaeological attention. The 250 artifacts come from camp sites, located for the most part on Lake Albanel, and include a lot of rather crude stone material, some of which may be Dorset. A joint report on the survey and the collection is anticipated from Johnson and Rogers in the spring. (The writer would like to point out that, if some of the material is definitely established as Dorset in character, this will be the first find of this character in the northern *inland* area, and furthermore the area itself lies just northwest of the headwaters of the Saguenay River, suggesting the possibilities of communication and diffusion of Dorset influences between James Bay and Tadoussac on the St. Lawrence.)

A *Progress Report* of the Arctic Institute of North America, dated June 20, 1947, announced two Research Fellowships of $2000 each for scientific work in the North American Arctic and Subarctic during 1948. Applications must be received by November 1, 1947, and awards will be announced by March, 1948. These Fellowships are open to anyone who has demonstrated his ability to carry out research work of superior quality in some field of science. Application forms may be obtained by addressing the Institute at 805 Sherbrooke Street West, Montreal, Canada. The type of scientific work sponsored by the Institute ranges from Physical Anthropology, Ethnology and Archaeology to Biology, Geology, Geography, Oceanography, Meteorology, etc. After October 1, 1947, a New York office of the Institute will be open at the American Geographical Society, Broadway and 156th Street. The library and extensive map collection of the Institute are housed at McGill University, Montreal.

The outstanding results of the excavations conducted by L. J. Giddings, Jr. this past summer was the establishment of a tree-ring chronology for the Kobuk-Kotzebue area going back into the tenth century A. D. Over 30 logs from the Intermediate Site at Kotzebue have bridged the gap between the relative dates of a "floating chronology" of 500 years and the dates based upon living trees. This confirms the correlations which Giddings himself had tentatively suggested. The relative dates previously published (AMERICAN ANTIQUITY, Vol. 10, No. 2, pp. 113–34, 1944) may now be read by adding one thousand; i.e., R.D. 400 becomes A.D. 1400. Thus, Ahteut, the oldest site, dates after A.D. 1230; Ekseavik and Old Kotzebue about 1400; Intermediate Kotzebue after 1530.

Conditions at Ahteut on the Kobuk were unfavorable for the preservation of wood, bone, antler, and ivory, but one of the harpoon heads is similar in form and decoration to Collins' Late Punuk type of St. Lawrence Island. Dog traction and plate armor are both well represented at Intermediate Kotzebue, but are lacking at all of the older sites. Similarly, jade, which is abundant at all recent sites, is represented by only a few pieces at the earlier sites. In one of the late houses excavated at Kavet Creek, Giddings found the skeleton of a man who appeared to have been murdered with a long jade knife, but the dating was in the late seventeenth century.

Giddings reports that houses at Ekseavik were occupied over a long span of time. Some houses had rounded corners and extensions of the walls inward to outline four semicircular lamp niches. Permanent frost about the floor and lower walls preserved materials, so that he secured even willow-bark netting and pieces of skin. One house alone yielded 50-odd datable timbers. He writes that this site "shows perhaps closer affinity with the Canadian Thule culture than with any Alaskan phase thus far reported in detail." Extensive collections were also secured from the Intermediate Kotzebue site, which when analyzed will give a good picture of life on the coast in the fifteenth century.

The first well authenticated example of a fluted point which unquestionably belongs in the Folsom category coming from Alaska was found last June by Raymond M. Thompson, Geologist, Fuel Section, U. S. Geological Survey, who was in Alaska on loan to the Alaskan Section of the Survey. Thompson was doing reconnaissance work in the area east of the Meade River and north of the Brooks Range. On June 24, while near the headwaters of the Utukok River, he found the point lying on the surface on a high ridge about two miles east of the river. The location is 180 miles southwest of Point Barrow, 70 miles southeast of Point Lay, and 40 miles north of the Brooks Range, at Latitude 69°7′ North and Longitude 159°50′ West. There were a few scattered chips of stone in the vicinity, but no other artifacts.

The point was made from black chert, a type of stone derived from the Mississippian deposits in that area. The point is practically complete, only a very minute portion of the base being broken off at one corner. On one face a good channel extends almost two-thirds of the length of the blade. On the other face there is a double channel of about the same length. The first flake removed on this face apparently did not leave a deep enough channel to satisfy the maker and a second and narrower one was struck out. At first glance this gives the impression of three channels on the one face, but closer examination reveals the fact that there actually are but two. The practice of trying to improve on a channel was not uncommon, as examples showing the same feature are known from the Lindenmeier site and have been found in New Mexico.

Thompson reports the existence of quarries in that area and also sites containing later materials. One quarry where black chert was obtained is not a great distance from the location where the point was found. No examples of points damaged in manufacture or other materials which definitely could be attributed to the Folsom complex were found there. It seems possible, however, that further investigation in the area might produce additional materials. Thompson returned to Washington, D. C. at the end of September, bringing the point with him. It is an extremely interesting find and represents the farthest north that traces of Folsom man have been found to date. The fact that it came from a section considerably north of Bering Strait makes it all the more interesting. Thompson certainly is to be congratulated on his discovery.

With the support of the Office of Naval Research, Vilhjalmur Stefansson is preparing for publication an Encyclopedia on the Arctic, the articles for which are being written by authorities in the various fields. Henry B. Collins is serving as consultant and adviser for the anthropological sections. The following anthropologists are expected to be among the contributors: K. Birket-Smith, H. B. Collins, J. M. Cooper, Viola Garfield, J. L. Giddings, E. Golomshtok, R. F. Heizer, Erik Holtved, D. Jenness, F. de Laguna, Margaret Lantis, Helge Larsen, Douglas Leechman, Therkel Mathiassen, T. F. McIlwraith, Robert A. McKennan, George Quimby, F. G. Rainey, Aage Roussell, Graham Rowley, Richard Slobodin, F. G. Speck, V. Stefansson, W. D. Strong, Wm. Thalbitzer, E. M. Weyer.

Two other projects of interest to Arctic anthropology are a Bibliography on the Arctic and a Roster of Arctic Specialists. These are being prepared by the Arctic Institute of North America with funds provided by the Office of Naval Research, the War Department, and the Office of Defense Research of Canada. Seven persons are at present working on the projects which will run for two to three years. The projects are being carried out under the supervision of a Directing Committee (H. B. Collins, Chairman), composed of members of the Board of Governors and Officers of the Arctic Institute and representatives of the Library of Congress and the National Research Council. (*F. de L.* with grateful acknowledgements to *Henry B. Collins* and *F.H.H.R., Jr.*)

PACIFIC COAST AREA

M. R. Harrington, Curator of the Southwest Museum, states that the Archaeological Survey Association of Southern California, brain child of Edwin F. Walker of the Southwest Museum and founded at that institution last January, has been exceedingly active since that date. In fact, every weekend has seen a field party of from 3 to 35 members in action.

Organized to locate and record all aboriginal sites still remaining in southern California, its chief function thus far has been the investigation of areas soon to be drowned by proposed dams or bulldozed out of existence to make room for highways, building operations, or other "improvements."

Five museums are cooperating in the project besides the Southwest Museum, including the Los Angeles Museum of History, Science and Art; the San Diego Museum of Man; the Antelope Valley Museum; and the Museums of the Kern County and San Bernardino Historical Societies. The President is G. W. Brainerd of the Southwest Museum; David Rice is Secretary-Treasurer; Mrs. Bertha Parker Cody (daughter of Arthur C. Parker) is Recording Secretary; Chairman of the Field Committee is Edwin F. Walker. Membership includes both professional and amateur archaeologists.

Specimens found by survey parties are deposited in the nearest sponsoring Museum; records now in manuscript form will be systematically entered on punch cards and sites located on maps, all of which will be available to the cooperating museums and accredited students.

Both Federal and State authorities have regarded the project with favor and have offered cooperation. In fact, the Governor of California has directed all road crews encountering Indian material to notify the Association.

The long delayed report on the Southwest Museum's excavations at Borax Lake, Lake County, California is now in press; and, it is hoped, will soon be ready for distribution. Three seasons' work were accomplished at this puzzling early site, under the direction of Curator M. R. Harrington.

The Western Museums Conference is scheduled to meet at the Southwest Museum in November.

Dr. Luther S. Cressman, University of Oregon (Eugene) sends the following interesting news: "This past summer we had an archaeological field party on the Klamath Indian Reservation starting a program of work to determine whether the cultural affiliations of the area are more closely allied to the Plateau or the Northern Great Basin and what, if any, affiliation appears in time. We concentrated our work this summer mostly on house pits in the vicinity of Chiloquin, on both the Williamson and Sprague rivers.

There apparently were at least two types of houses, neither of which seems to fall clearly into the Plateau type as has been described for the Klamath. It was impossible to establish any pattern of post holes or use of heavy timbers in the Plateau pattern. One house, apparently, had a side entrance.

"A cave on Sprague River was opened and gives promise of great importance for establishing a chronology for the region. While the section of the cave that was excavated contained few artifacts, it shows occupation to a depth of 2.5 meters. The part of the cave excavated seems to be on the outer border of the occupational debris so that next season's digging, in the inner part of the cave, will give considerably more information that at present is available. The occurrence of a stratum of pumice from the Crater Lake explosion overlying the bottom occupational bed gives promise of making it possible to date the occupation of this cave. The deposition of the pumice can probably be correlated with the explosions which formed the crater in which Crater Lake now lies, but it will require further study of more extensive exposures in the cave to get a conclusive decision.

"Excavation was also carried out in a very limited locality in the high Cascades at the east end of Odell Lake where construction work indicated artifacts below Crater Lake pumice. There was a possibility that this pumice might be a secondary deposit, so on October 11 and 12 we dug a trench across the critical areas, through the pumice, and into the decomposed glacial till on which it rested. Ira Allison, Professor of Geology, Oregon State College, examined the profile and stated definitely that the pumice lay as initially deposited. A few points, scrapers, and large numbers of flakes were taken from the decomposed glacial till from just under the surface to approximately one foot. Charcoal specimens have been sent to Ralph Chaney of the University of California, for identification. This locality was clearly a camp site as shown by the great numbers of flakes. This site would date around sometime more than 10,000 years ago on the basis of most recent chronological studies in the Pacific Northwest.[1] It is regrettable that extensive excavation cannot be carried out here since the site is important in view of the variety of implements to be found there. It is, however, occupied as a resort and the work was made possible through the courtesy and interest of one of the proprietors, Charles A. Porter. We plan to continue our work next summer in the Klamath area and, if possible, push it out into neighboring localities.

"Robert F. Spencer has been added to the staff of this Department, and D. S. Davidson is taking Barnett's place. H. G. Barnett and Allen H. Murphy are in the Palaus on a ten month's project for the University of Oregon under the C.I.M.A. Philip Drucker, in charge of River Basin Surveys in the West, made his headquarters at the University of Oregon during the field period of 1947."

Erna Gunther, University of Washington, contributes the following news: "Carroll Burroughs, Assistant Director of the Chaco Field School for the past two seasons, is now acting Instructor in Anthropology at the University of Washington. He will conduct their field school in archaeology in the San Juan Islands next summer and is supervising the archaeological survey of the State. This survey is financed by the Frank and Bertha Wilson Fund.

"In conjunction with the Field School in Archaeology the University had a unique archaeological expedition on the 'Kokanee,' a small cabin cruiser. Three students, Robert Lane, Peter Kilburn, and Byrd Helligas, spent two months on a survey of the smaller San Juan Islands, mapping and inspecting sites."

The Santa Barbara Museum of Natural History's Santa Rosa Island Expedition, according to a letter from Phil C. Orr of that institution, has completed its work for the summer, which was concentrated more on the fossil animals of the Pleistocene than on Archaeology. However, in connection with the work of excavating and prospecting for fossils, a thorough survey of some 22 village sites was made. Test pits or burials were excavated in five sites and plans are being made to continue the work next year.

A number of unique situations were discovered, one being the skeleton of a "giant"—probably a man of 6 feet 4 inches or more, around whose skeleton were 34 abalone "prize bars" ranging in length from 1 to 5 feet.

Two sites were found in which the thatching of the houses, cordage and fabric, have been preserved. One site contains wooden objects. A model canoe, carved of wood and in an excellent state of preservation, was found, as was also a log some 14 feet in length with notches cut to form steps. It is probable that this served as a "ladder" as the site is on a high cliff.

Work this summer was under the direction of Phil C. Orr, Curator of Paleontology-Anthropology, assisted by Edwin Rice. It was made possible through the assistance of David Gray, Jr. and George Hammond, who piloted the aircraft which ferried expeditionary members to the island. Edwin Rice of Fillmore, California, a student at the Santa Barbara College, University of California, joined the expedition during the summer, and is continuing with the Santa Barbara Museum of Natural History in a part time capacity as preparator.

E. W. Gifford, Curator of the Univeristy Museum of Anthropology, has recently returned from an extended archaeological field trip to Fiji. The period from March 23 to September 9, 1947 was spent on Viti Levu. Work began with a site reconnaissance which resulted in the location of 40 settlements, two of which were excavated, one for six weeks the other for five. The main result was the demonstration of two culture horizons. The late prehistoric-modern culture is characterized by incised pottery, the early horizon by pottery decorated in low relief. The extensive collections are now in Berkeley undergoing analysis. The cost of the expedition was defrayed by a grant from the Viking Fund, Inc., and the work in the field was made easier by the cooperation of the Fijian government, which supplied a trained, paid assistant.

During the month of July the Department of Anthropology at Berkeley sent out three separate archaeological expeditions. One was under the direction of Mr. Russell Newman, who took nine University students and excavated at two sites in the Sacramento Valley. One, the Richards site, situated a few miles above Sacramento on the east bank of the Sacramento River, produced evidence of late prehistoric and late historic occupation. The second,

[1] Henry P. Hansen, "Postglacial Forest Succession, Climate, and Chronology in the Pacific Northwest," *Transactions of the American Philosophical Society*, N. S., Vol. 37, Pt. 1, p. 114, Table 9, 1947.

the Johnson site on the Cosumnes River, produced 40 burials and considerable numbers of small baked clay objects, which it is believed were substitutes for rocks used in "stone boiling" in this alluvial region.

Another field party, in charge of R. F. Heizer, excavated a burial-occupation deposit attributed to the Early Central California Horizon. Over 80 burials were recovered, many of which produced quantities of grave offerings in the form of beads, perforated plummets, quartz crystals, and chipped projectile points. The culture disclosed indicates that this site is the most variable on record for this Horizon, since it exhibits many features which are to become highly characteristic of the succeeding Middle Horizon.

The third field party was a joint undertaking of the Departments of Anthropology of the University of California at Los Angeles and at Berkeley. Excavation was directed by A. E. Treganza of Berkeley assisted by Miss C. E. Malamud of Los Angeles. The crew was made up of students from both Departments. The culture disclosed cannot in the present state of analysis be correlated with anything so far discovered in California. It has been named the Topanga culture. Heavy duty core tools predominate: the basin metate; ovoid, wedge-shaped profile manos; and Gypsum Cave-type projectile points seem characteristic. Nearly four tons of stone implements were recovered by the expedition. Seven examples of bundle reburial and primary inhumation in the dorsally, or ventrally extended positions were found. All stone implements are heavily patinated; the skeletal material is altered; and a mature soil profile has formed in the deposit mass. Five thousand cubic feet of deposit were excavated; the average yield was one finished specimen per 1.5 cubic foot. All indications point toward the considerable antiquity of the site. It is hoped that geo-morphologists and soil chemists may assist in dating the deposit. It seems possible that the San Dieguito-Lake Mohave flaked tools are combined here with the metate and extended burial already known in the Oak Grove culture of Santa Barbara. Present plans are for a second season's excavation in this deposit.

S. F. Cook and R. F. Heizer have received a grant from the Viking Fund, Inc. to carry out further research on the problem of dating mineralized human bones. A preliminary report has been published in the July number of the *American Journal of Physical Anthropology*.

Franklin Fenenga has been appointed Research Assistant in the Department of Anthropology, University of California, Berkeley, and will prepare an analysis of the extensive excavations of settlements attributable to the Middle Central California Horizon.

W. C. Massey is engaged in analyzing the collections made by him as a member of the first expedition of the Institute of Tropical Bio-Geography to Baja California. He has prepared a preliminary report for publication.

Professor Alfred L. Kroeber was elected an Honorary President of the Twenty-Eighth International Congress of Americanists. In the notification which accompanied the announcement of this distinguished honor to Professor Kroeber, was the statement that the action had been taken "in affirmation of the respect and admiration of all for the eminent contributions which you have made to the progress of our science."

F. Fenenga and C. E. Smith, graduate students at Berkeley, spent the summer in making an archaeological survey in central Oregon and along the Columbia River. Three Army Engineer reservoir areas on the Santiam and Middle Fork of the Willamette River yielded no evidence of aboriginal sites. The Columbia River survey (from Hanford to Umatilla, and including the lower courses of the Walla Walla, Yakima, and Snake Rivers) resulted in the location of 120 sites and extensive surface collections of artifacts. Three sites are presumably ancient since they lie deeply buried under alluvium and volcanic ash layers. Smith is continuing survey work during the fall semester in Napa, Yolo, and Solano counties (central California) in four Bureau of Reclamation reservoir site areas.

Russell Newman is making progress in an anthropometric survey of skeletal material from the Early, Middle, and Late culture horizons. Thus far, analysis of a selected Late series of 50 complete adult male skeletons (using over 100 measurements and observations) has been completed. The Late population was a fairly homogeneous group and is characterized by medium stature (167 cm.), average cranial index (about 80), low mesorrhine nose, high heads, and an average cranial capacity of 1575 c.c. (by Lee-Pearson formula). Occipital flattening is slight but common and is probably to be interpreted as the unintentional result of cradleboard pressure. Newman is now working on a similar series of Early horizon skeletons. (*R.F.H.*)

THE SOUTHWEST

The University of Arizona Archaeological Field School concluded its second season at Point of Pines on August 11, under the direction of Emil Haury, who has provided the following pertinent information:

"The excavation of a 21-room pueblo, begun in 1946, was completed together with the study of 15 pithouses of Pueblo III date lying below this pueblo. In addition, excavation was launched in a large (approximately 600 rooms) pueblo of probably the twelfth and thirteenth centuries. This work included the clearing of a dozen domestic quarters and a late square version of a great kiva, measuring 50 by 55 feet. This structure was roofed and was incorporated within the pueblo itself but was not subterranean. Although a number of features remain to be studied further next year, it appears at the moment that this building represents a late manifestation and perhaps the dying gasp of the great kiva idea.

"A number of points have emerged from the work so far: (*a*) the probable presence of small square kivas in this southern Anasazi territory detached from the pueblos; (*b*) a decline in the culture during the fourteenth and possibly early fifteenth centuries; (*c*) a sudden withdrawal from the region for reasons yet to be determined; (*d*) an intermediate developmental step between the Pinedale and Canyon Creek phases.

"The Field School numbered seventeen students, all but three of graduate standing, representing the following institutions: Columbia University, Harvard University, Tufts College, and the University of Arizona.

"By unanimous vote the participants of the Southwestern Archaeological Conference at the University of New Mexico's Field School in Chaco Canyon have agreed to hold the next Conference at the University of Arizona's Point of Pines camp late in August, 1948."

During the summer of 1947, the Museum of Northern Arizona sponsored no field work in Anthropology, but two graduate students worked in the ceramic laboratory under the direction of Dr. Harold S. Colton. George Ennis of the University of Pennsylvania made a two months' study of archaeological survey material from near Snowflake, Arizona. Fred Wendorf of the University of Arizona worked over a large survey collection from the Petrified Forest National Monument, loaned by the Monument to the Museum. Katharine Bartlett made considerable progress on her report on the human skeletal material in the Museum collection. Dr. Colton nearly completed his book on "Hopi Indian Kachina Dolls," and another on "How to Study Potsherds." Visitors included Gladys Reichard, who is staying in Flagstaff from June to January, John C. McGregor, and Alfred F. Whiting, former staff members.

The archaeological work carried out during the summer of 1947 by the Department of Anthropology of the University of Utah has been primarily concentrated on excavations in the Great Salt Lake area and an analysis of specimens collected by expeditions in the Wendover, Utah area and elsewhere prior to World War II.

A grant by the University of Utah Research Committee enabled the Department to carry out the partial excavations of two caves on the Stansbury Island in the Great Salt Lake. This work will be published in the spring of 1948 by Mr. Sydney Jameson as a thesis and as separate articles. There are, at present, at least four cultural levels recognized: Shoshoni, Promontory, Puebloid, and Blackrock-Deadman. Two complete skeletons and the parts of two others were found associated with cultural materials at specific levels. The stratigraphy found in these caves will be used by Professor Ray Marsell of the University Geology Department in studying the revisions of the Lake Bonneville—Great Salt Lake chronological sequences. This combination of archaeological and geological material and effort should produce a more adequate dating technique for archaeological materials found in the caves and blow-outs within the confines of the Lake Bonneville region.

A series of studies on skeletal material from the ancient caves of the Great Salt Lake region is being carried out by Mr. William C. Blair, a student of Physical Anthropology. These studies will be published soon.

Etched stones, one of the principal diagnostic traits of the Promontory culture of the Great Salt Lake region, are being studied and publication will be forthcoming within the near future by Elmer R. Smith and William C. Blair. This publication will attempt a more definite description of the etched stones and suggestions of purpose will be attempted upon the basis of comparative material from neighboring areas.

The archaeological material from the caves of the Wendover area, obtained from three years of excavation before the war by Elmer R. Smith, is being studied and preparation for publication is under way for "Ancient Caves of the Wendover, Utah, Area."

Mr. Robert Stirland, a student in Anthropology, was able to do some archaeological survey work while employed by the Dinosaur National Monument. His survey covered the northern boundary of the Dinosaur National Monument on the Utah-Colorado line. The area is known as Jones Hole Canyon. Material found included artifacts of various types from nineteen sites, including open, cave, and rock shelter types. This material is being made ready for analysis and publication for the benefit of both the University and the Dinosaur National Monument.

Charles E. Dibble returned from the Paris conference of the International Congress of Americanists, where he delivered a paper on Aztec Codices. He has just completed a paper on the Hall Codex which is now in press. He is carrying on further analysis of Aztec Codices and is beginning work on the translation of a number of other documents dealing with early Aztec history. In addition, he has in preparation a paper on the archaeology of Montezuma Canyon in southern Utah.

Utah's anthropological plans for the future are more or less dependent upon the developments for anthropological research under the newly created Department of Anthropology. It is hoped, however, that more work can be done on Stansbury Island, in the area of northern Nevada, northwestern Utah, and southwestern Idaho, as well as archaeological excavations in the high plateau areas of eastern Utah and western Colorado.

The newly established Department of Anthropology of the University of Colorado at Boulder consists of Omer Stewart and Robert Lister, who are teaching on a full-time basis, and Earl Morris, of the Carnegie Institution of Washington, and F. H. Douglas, of the Denver Art Museum, who teach on a part-time basis. During the past summer, Stewart worked on attitudes toward minority groups within the state, using two questionnaires which he circulated widely. Lister accomplished some survey work and small-scale excavations in Pueblo sites in the vicinity of Watrous, New Mexico. Robert Burgh, archaeologist associated with the University of Colorado Museum, undertook a survey for the River Valley Program in reservoir sites in the state.

Next summer the department plans to have two groups of students in the field. One will attempt an acculturation study under the direction of Stewart, probably in the area of Ignacio, Colorado. The second group will do archaeological work under the direction of Lister and Burgh at locations not yet determined.

At the Lake Mead Recreational Area, Gordon C. Baldwin of the National Park Service has spent the past summer working on the laboratory analysis of material recovered from his 1943 archaeological survey of the Davis Dam Reservoir area along the Colorado River below Hoover Dam. The material consists of surface potsherds and other items collected from 155 recorded sites. Salvage excavation in the Davis Dam area was scheduled to begin in the Fall. Half a dozen key sites of the so-called Patayan culture will involve approximately three months of field work. The project is undertaken by the National Park Service with the cooperation of the Bureau of Reclamation. Funds are available for a limited amount of laboratory work at the conclusion of the excavation program.

Gila Pueblo has undertaken archaeological excavation at Mesa Verde National Park, Colorado. Deric O'Brien has excavated completely or in part, during the past summer, two early pueblos and one Classic Pueblo site. O'Brien plans to spend next season at Mesa Verde to round out the picture of Basketmaker III through Pueblo III in that particular region. Currently, Gila Pueblo also is attempting to

secure datable wood and is defining architectural characteristics of early St. John's Polychrome pueblos around Springerville, Arizona. The Gila Pueblo Tree-Ring Laboratory has been and is actively engaged in the study of wood, not only of specimens secured in recent Gila Pueblo excavations but also in series of wood sent in by archaeologists of other institutions. Two new *Medallion Papers* have been distributed recently: No. 35, "The San Simon Valley II. Skeletal Material" and No. 37, "Tree-Ring Analysis: Tree-Rings and Droughts."

At the Department of Anthropology of the University of Denver, E. T. Hall, Jr., devoted a part of the summer to a survey for the Smithsonian Institution and Bureau of Conservation and Human Relations of the city of Denver. Arnold Withers assisted Emil Haury at the Point of Pines excavations of the University of Arizona. Professor E. B. Renaud took a group of students to Mexico. Marie Wormington of the Colorado Museum of Natural History, excavated a part of a peripheral Pueblo site north of Cisco, Utah, with the assistance of a group of University of Denver students. The University plans to continue the survey of areas to be inundated when conservancy projects are complete as well as the studies of human relations for the city. Next year's plans call for an archaeological survey in the vicinity of Walkenburg, in charge of Arnold Withers.

The Anthropology Department of the University of Texas has not engaged in much actual fieldwork recently, but has acted in advisory capacity for several undertakings. Its archaeological staff is concentrating on the completion of major publications. Mr. J. Charles Kelley made two short field trips during the summer to seek further data on Jumano Indian occupation of the Llano River country in west central Texas. He has also continued work on the publication of the very extensive WPA excavations in the Colorado River valley of central Texas. Thomas N. Campbell, who returned to Texas from Harvard University in June, made a brief survey of the Texas and Tamaulipas shoreline with W. Armstrong Price of Corpus Christi, a consulting geologist. Price is studying shoreline changes and dune formations of the Recent period along the Texas coast for the Humble Oil Company. In pursuing this work he has outlined an extensive series of climatic changes as reflected in the forming of clay-dune fields between Corpus Christi Bay and the Rio Grande mouth. In June he and Campbell flew down the coast to the Rio San Fernando and Rio Soto La Marina in Tamaulipas, landing on the lagoons near eroding clay dunes. Artifact collections were made, in some cases from the surfaces of old, covered dunes now being exposed. By tracing Huastecan pottery northward to the Rio Grande delta, and cross-tying with the cultures of the Corpus Christi Bay region, it is hoped that the chronological sequence outlined by Ekholm at Tampico can be carried eastward around the Gulf some distance. At the same time, the chronology may be applied to the erosion cycles between dune formations. This appears to be possible only in relatively late horizons, but it is fairly clear that dune formation and erosion cycles continued as recurrent events until historic times along this coast.

Alex Krieger, University of Texas archaeologist, made field trips during the summer to the Corpus Christi area with T. N. Campbell, to the River Basin Survey operations in Texas (see below), to reported mound sites in eastern Texas, and to the Red and Ouachita River valleys of northern Louisiana and southwestern Arkansas. Two cemeteries near the great Battle Mound east of Texarkana were examined, and pottery from them photographed. Several previously unreported temple mounds, some of unexpected size and height, were seen in the middle Ouachita Valley, and private collections were photographed. In every case, the actual building of the mound belongs to a period earlier than the classic "Caddoan," but not to the Coles Creek peoples, as generally thought. This information is being used in a large publication on the Davis site ("Alto Mound") in central eastern Texas. Krieger plans to review the recent developments in the contact problem between the Mississippian cultures and Middle America, and believes that the Davis site contains evidence for ceramic borrowing from southern Mexico. The presence of a large temple mound of simple construction and much charred corn at this site has further interesting implications.

Late in March, Mr. Joe Ben Wheat began a survey of the Addicks Dam reservoir area for the Smithsonian Institution's River Basin Survey. The area lies 17 miles west of Houston near the western edge of the southern pine belt. After a survey in which he was aided by W. Marshall Black of Houston, Mr. Wheat began excavations in two low mounds and continued until the end of July. A very large amount of pottery and flint artifacts was recovered with only a small crew, and the trenches revealed a sequence from non-ceramic "Archaic" through the appearance of a plain sandy pottery, to a horizon in which fine, light arrowpoints appeared. Mr. Wheat spent August in analyzing his collections at the University of Texas archaeological laboratory.

During the summer, the Houston Anthropological Society was formed at the Houston Museum of Natural History, Robert A. Vines, director. Mr. R. B. Worthington was chosen temporary president and moves were made (1) to continue careful excavation of the sites trenched by Mr. Wheat for the Smithsonian Institution, (2) to conduct site surveys in the Houston-Galveston area, and (3) to excavate key sites as time was available, using approved methods and careful recording. In September, Mr. Krieger addressed the Society on the major problems on which they could discover new information in their area, and on excavation problems. With many intelligent and enthusiastic members, it is believed that the Houston society will contribute much new information on the Gulf plain and interior pine lands of southeastern Texas.

During the first half of May, Mr. Robert L. Stephenson, formerly of the University of Oregon, joined the River Basin Survey and began a survey of the Hords Creek Dam reservoir in Coleman County, central Texas. Only a small amount of information resulted, and he was moved to the more pressing problem of the large Whitney Dam reservoir on the Brazos River in Hill and Bosque Counties, central Texas. Stephenson spent four and a half months in surveying this basin completely and excavating several important rock shelters. On October 1, he moved to Austin to begin laboratory analysis of his work, which should provide many links with better-known parts of Texas. He will move to the Neches River dam projects in eastern Texas in the Fall. On all of these projects the River Basin Survey men have been accorded the most friendly and helpful coopera-

tion of the Army Corps of Engineers and Bureau of Reclamation engineers, who have done everything possible to expedite the work.

The Texas Memorial Museum, Austin, conducted excavations in southwestern Texas during the spring and summer. The first work was done by Grayson E. Meade and Glen E. Evans in a rock shelter near Nontell, Uvalde County, in the canyons of the upper Nueces River. This excavation revealed a late prehistoric surface horizon above a typical "burnt-rock midden," but artifacts were also found below this midden which promise to be of extreme importance. Other rock middens on the upper Nueces were tested, and in August and September Evans and Meade made trenches through burnt-rock middens in Bandera County. This work has revealed new information, and these workers are also obtaining data on the economic and ecological life of the native cultures which promises to be of primary interest. Close cooperation has been maintained with University of Texas archaeologists. The fieldwork has been generously supported by private funds.

The summer program of the University of New Mexico included a general field session with seventy students at Chaco Canyon, the Southwestern Archaeological Conference (also at Chaco), a five-week reconnaissance with 23 students in southeastern Chihuahua, as well as independent research projects of a dozen graduate or advanced students in Tennessee, Texas, New Mexico, and Arizona.

In collaboration with the general field session at Chaco, a series of independent research projects was undertaken by advanced students: (1) An intensive survey, carried out in part with the assistance of aerial photographs on a scale of 8 inches to the mile, was inaugurated under the direction of Lloyd Pierson. The ultimate problem here is an attempt to reconstruct the human population figures of the different Chaco phases, testing application of individuals-per-room of the present-day Pueblos. (2) Parts of two additional sites in the "Bc" rincon opposite Chetro Ketl were excavated. These were supervised by Carroll Burroughs and Thomas Mathews. Mathews' site, which will form the basis for a thesis, yielded a particular contribution in the form of the latest masonry yet encountered in sites of Pueblo III construction. (3) The excavation of a deep pithouse near Shabik'eshchee, which had been cut by the arroyo and was reported by Al Lancaster of the National Park Service, formed a separate project for Richard N. Adams, now of Yale. (4) Mrs. Charlotte Toelle Bachen, formerly of Montana and now at Wisconsin, began a study designed to test the use of statistical method in relation to the designs of black-on-white pottery types of Chaco Canyon. (5) Lloyd Synder, of the University of New Mexico, made some headway in a study of water storage basins and artificial waterways on the north cliffs of the Canyon, and Howard Sargent, of Yale, undertook an individual examination of a late "refugee" site southeast of Peñasco Blanco. Lesser projects numbered eight. Lecturers during the general session included Stanley Stubbs, of the Laboratory of Anthropology; H. P. Mera; R. G. Vivian, of the National Park Service; Irving Rouse, of Yale University; William H. Kelly, of McGill University; and Paul Reiter, of the University of New Mexico, Director of the Field Sessions.

The reconnaissance of the advanced field session in southern Chihuahua centered about the test excavation of a small cave between Parral and Jiménez, where a peculiar group of assymmetrical points were found beneath a shallow layer of neolithic material and a thick, sterile layer. This brief excavation was supervised by Boyd Wettlaufer, of the University of New Mexico. Farther to the south, in the region of Escalon and Los Remedios, the inlets of a series of playas formed terraces where these same points, with others, were found in profusion. (The points are still in Mexico and a full description is not yet available.) In addition, though generally sterile, half a dozen rock shelters were examined and the sites trenched. A small series of surface "workshops" also were located. One rock shelter just south of Chihuahua City, examined by Miss Barbara Cornett, proved valuable and appears to warrant more extensive, future work.

Other field research projects included the work of a graduate student, Robert Aden, on an archaeological survey of Henry County, Tennessee. This work was undertaken with the cooperation of the Department of Anthropology of the University of Tennessee. A second project had to do with a partial survey and excavation of three sites in Tule Canyon, Whitewater Draw, near Tulia, Texas. Here collections of Yuma material have been made. This party consisted of H. V. Brown, Raymond Rixey, and Boyd Wettlaufer, of the University of New Mexico. Another project involved a brief survey and the partial excavation of one site northwest of Pietown, New Mexico, by William F. McConnell and Alfred E. Dittert, Jr. The material from this project will form a thesis. Gregory Hawk continued his survey of sites in Taos County, following partial excavation of a pithouse last year. Frank C. Hibben pursued a private project of research and fieldwork in Alaskan Archaeology.

In addition to the above, three Ph.D. candidates at the University of New Mexico undertook ethnological fieldwork relating to their doctoral theses. Two of these worked in New Mexico, one in Arizona.

For the fifth time, the University of New Mexico was host this year to the archaeologists and ethnologists who attended the Southwestern Archaeological Conference at Chaco Canyon on July 28, 29, and 30. The institutions represented included Harvard University, Carnegie Institution of Washington, University of Washington, San Diego Museum of Man, Smithsonian Institution, University of Oklahoma, University of Texas, Pueblo Grande of Phoenix, Gila Pueblo, Laboratory of Anthropology, Museum of New Mexico, Ohio State University, University of Chicago, University of Colorado, University of New Mexico, and the National Park Service. Chairmen elected for the different meetings were Walter Taylor, Clyde Kluckhohn, Erik Reed, and Alfred Vincent Kidder.

The majority of the discussions were of a generalized nature and a considerable emphasis was placed upon ethnological as well as archaeological problems and progress. The mutual interdependence of the two related disciplines was more strongly brought into relief than at former meetings. Among the points receiving a relatively concentrated attention and discussion were the following:

1. The relative merits of the term "Anasazi" versus "Basketmaker-Pueblo."
2. The degree of possible influence of Mogollon upon northern cultures.
3. Relationship of Archaeology to Ethnology; social organization to

ground-plan and architecture; ethnological material culture to archaeological; the integration of the two; and the need of an ethnological study of material culture as intensive as social organization studies.

4. Characteristics and distributions of the Plainview Points.

5. How far does one dare go in making ethnological conclusions from archaeological evidence?

6. Relationship of Mogollon to Anasazi and to Pueblo, particularly as regards the great kiva and its distribution.

7. Relationships of various central and north Mexican cultures.

8. An informal listing of "blank spots" in Southwestern fieldwork.

9. An informal listing of experts in identification of artifact and related materials from Southwestern excavations (to be published by the Clearing House for Southwestern Museums).

10. Mutual influences of returning Indian veterans on their own native communities.

11. Problems of National Park Service personnel (*a*) in regard to presentation of accurate information to the traveling public in a popular manner, and (*b*) when faced by an increased amount of necessary restoration and a critically diminished budget.

Brief comments regarding field work at various locations were made by the following:

Gap between Basketmaker III and Pueblo III at Mesa Verde	Deric O'Brien
Recent researches in Chaco Canyon	Reiter
Chaco sites of turtle-back adobe wall construction	Vivian
Salado and Pima population sources	Shroeder (via Steen)
Social organization and change in Pueblos	Eggan
Zuni changes in light of returning veterans	Adair
Ramah Navaho changes in light of returning veterans	Vogt
Rorshach testing of Ramah Navaho and Zuni for personality configurations	Kaplan
Ramah Navaho dreams and child behavior	Roheim (via Kluckhohn)
Problems in Chaco Navaho ethnology	Sloan, Pitkin
Southern Pueblo periphery, seventh to fifteenth centuries	Haury (via Kidder)
Southwest and Plains influences in Texas	Krieger
Survey of Colorado River sites	Rogers (via Cain)
Human biology, genetics, seriology of Ramah population	Spuhler
Augustine Plains and Cebolleta Mesa survey	Dittert

In addition, those attending the conference approved the following:

1. The formation of a committee to pass a resolution regarding the Antiquities Act.

2. The formation of a committee to examine possibilities of clarification and possibility of definition of the terminology of Southwestern archaeology.

Mr. Charles Lange, formerly a graduate assistant at the University of New Mexico, is now Instructor in Anthropology at the University of Texas. Mr. Carroll Burroughs, also formerly a New Mexico graduate assistant, is now Instructor in Anthropology at the University of Washington, Seattle. Mr. Raymond Rixey is now with the National Park Service at Chaco Canyon.

Donald D. Brand resigned as head of the Department of Anthropology and is now with the Department of Geography, University of Michigan. W. W. Hill is the new head of the Department of Anthropology at New Mexico.

At Santa Fe, the long-planned merger between the Laboratory of Anthropology and the Museum of New Mexico has been effected, pending the approval of the legislature of the State of New Mexico. The July meeting of the Laboratory's Board of Trustees first approved the merger terms which were ratified early in September by the respective boards of the School of American Research and the Museum of New Mexico. The Laboratory Board accepted the resignations of Maurice Ries as Director and of James W. Young as President of the Board. The Hon. Boaz Long was elected as the new President of the Board.

Sylvanus G. Morley, acting Director of the School and Museum since June 1, was elected permanent Director of the combined institutions. Two Fellows in History of the combined institutions were named: France V. Scholes, Dean of the Graduate School, and Frank D. Reeve, Professor of History, University of New Mexico.

Each of the three governing boards will maintain its respective position and membership.

The unification project stipulates that the Laboratory which was closed as a place of public exhibition on September 17, is to be used in the future as a study and research center and as a meeting place for scientific gatherings, in accord with the original purpose for which it was founded. It will also serve as the administrative center for the institutions. The Palace of the Governors on the Plaza at Santa Fe will, as before, house the archaeological, colonial, and historical exhibits. The Hall of Ethnology will display ethnological material and rotating exhibits, while the Art Gallery will be devoted to paintings, sculpture, and public musical events.

Mr. Stanley Stubbs will oversee the technical aspects of curatorial exhibition and Albert G. Ely will serve as Executive Secretary of the combined institutions.

Chetro Ketl, one of the larger of the Chaco ruins, was severely damaged by a flood during August. The arroyo draining the side canyon digressed from its normal course and flooded the deep rooms excavated along the north side of the pueblo, as well as dissolving nearly 40 feet of the newly-repaired north wall. The National Park Service plans to restore as many walls as are necessary to support the 500-foot north wall. This work is already progressing under the direction of Gordon Vivian. Twenty deeply excavated rooms were filled with debris. (*P. R.*)

NORTHERN MISSISSIPPI VALLEY

A joint Illinois State Museum-University of Chicago expedition excavated at the Zimmerman and Starved Rock sites, LaSalle County, Illinois, from June 15 to August 15. Planned with the help of Fay-Cooper Cole and Thorne Deuel, the expedition was directed by John C. McGregor and Kenneth G. Orr. Among the members of the party were T. Barton Akeley, William Sears, Elaine Bluhm, Mrs. K. G. Orr, Ruth Howard, Richard Hagen, Ellis Burcaw, Charles and Gwen Gillette, Robert Shalkop, Susan Messinger, and Richard Trotter.

Excavations in the Zimmerman site yielded 3 house sites, 2 middens, 11 skeletons in 6 burials, and 4 pits. Four possible components were discovered: (1) a Fisher Aspect unit (Heally Component), (2) a Fort Ancient Aspect unit (Danner Component), (3) an Oneota-like unit (Zimmerman Component), and (4) a "Late Woodland" unit (Swanson Component). European trade materials were found in all components with the possible exception of the Fisher. The four components are thought to be roughly contemporaneous, with the Fisher being slightly older and extending backward into the pre-contact period.

At the Starved Rock site European trade materials were found intermixed with Fisher and other pottery in deep pits suggestive of European dugout shelters. Early Wood-

land pottery was also found as well as pottery of unidentified cultures, indicating a long occupation from an early period to the historic period.

Excavation of the two sites was for the purpose of locating the Old Kaskaskia village of the Illinois, thought to be in the vicinity of the Zimmerman site, and to identify La Salle's Fort Saint Louis, considered to be at Starved Rock. Locations of these sites had been indicated by the work of Mrs. Sarah Jones Tucker, R. S. MacNeish, and H. G. Smith. While no definite conclusions are possible at the present stage of the work, the finds seem to bear out the suggested identifications. The trade materials were apparently of French manufacture, a fact lending weight to the other evidence. It is suggested that the Fisher unit may represent the Kaskaskia Illinois, the Fort Ancient unit the visiting Shawnee, and the other units allied tribes from the north or west. Further excavations, planned for the summer of 1948, should help to clarify some of the problems that have been raised.

The cultural material is being studied at the University of Chicago and a progress report will be issued by the Department of Anthropology next spring. Georg K. Neumann of Indiana University studied the skeletal remains found this summer while at the Illinois State Museum in September, and his report will be included in the same publication.

Near Cairo, Illinois, following a report sent in by F. W. King, McGregor observed a mound being leveled by road machinery in September. The burial and other traits noted indicates a close relation between Ohio Hopewellian on the one hand and that found in Calhoun County on the other, and less in common with Hopewellian sites in the upper Illinois river drainage.

The first draft of McGregor's paper on field work at Havana, Illinois (Hopewellian) has been completed. The survey carried on jointly by the Illinois State Archaeological Society and the Museum is progressing steadily and in the next year or so should give a fair archaeological map of the state.

Georg K. Neumann, Indiana University, assisted by Elias Adis of Costa Rica, spent a month at Springfield and made a study of Hopewellian skeletal material in the collections of the Illinois State Museum and elsewhere in Illinois. This paper will be published in a later volume on Archaeology in the Museum series.

Thorne Deuel is working on two papers dealing with the personal appearance, face and body painting, jewelry and clothing, of the Hopewellian in Illinois; one is to be published by the Illinois State Historical Society and the other by the University of Chicago.

A new course in American Archaeology is being taught for the first time this fall quarter in the Department of Sociology, Ohio State University. John Bennett is teaching the course, with assistance on Indian skeletal problems from James Spuhler, and other instructional collaboration with Richard Morgan of the Ohio State Museum. Classes are held in the laboratories and seminar rooms of the Museum.

A joint Department of Sociology-Ohio State Museum archaeological expedition, offering hour credits, is tentatively planned for the summer of 1948.

An archaeological field crew from the Ohio State Museum carried on excavations at the Cole Site from July 1 to August 15. The site, located within the Delaware Reservoir area, is situated on a gravel knoll about five miles north of Delaware, Ohio. The work, under the general direction of Richard G. Morgan, was supervised by Raymond S. Baby of Western Reserve University. Excavations revealed a series of food storage pits containing potsherds and other village refuse. Preliminary examination of the pottery fragments seems to indicate an Indian group belonging to the Late Woodland period. Roger Leatherman of Ohio State University assisted with the work, along with a group of students from Ohio Wesleyan University.

Exploration of the Turpin site in Hamilton County, Ohio was resumed by the Cincinnati Museum of Natural History under the direction of Ralph Dury. The main cultural assemblage at the site pertains to the Madisonville Focus of the Fort Ancient Aspect. Partial examination of a mound revealed that it contained numerous burials. It is further reported that there is evidence of an earlier Woodland (Lewis) occupation of the area.

The formation of a Department of Anthropology at Indiana University was recently announced by the University's Board of Trustees. The new department is the first of its kind to be established in Indiana, and marks formal recognition of the subject by the state's leading educational institution.

Staff for the department includes C. F. Voegelin, chairman, George Neumann and William J. Wallace as full-time members, and Glenn Black and Paul Gebhart as special lecturers.

Work in all fields of Anthropology—Ethnology, Linguistics, Physical Anthropology—is being offered, as well as special courses in folklore, primitive art, human genetics, and general linguistics, which are being given in cooperation with other departments of the University. Besides offering an undergraduate major in Anthropology, it is also planned to offer graduate work leading to advanced degrees, within the near future. (*R.G.M.*)

NORTHEASTERN AREA

During the summer of 1947 the Robert S. Peabody Foundation of Phillips Academy, Andover conducted research in Maine and Massachusetts.

In collaboration with the Robert Abbe Museum, and under the direction of Douglas S. Byers and Wendell S. Hadlock, a party consisting of Theodore Stern, University of Pennsylvania; Robert Merrill, graduate student at Harvard; and Alice Bruce, graduate student at the University of Pennsylvania excavated a test section in the Hathaway "Red Paint" cemetery at Passadumkeag, Maine, finding several burials accompanied by artifacts.

The party later spent six weeks in partially exploring a camp site on a small island in the Union River, above Ellsworth Falls, Maine. Here a surface collection had produced fragmentary ground slate points, a gouge, a variety of chipped implements, and potsherds. Two, and perhaps three, periods of occupation seem indicated, but further work is required to clarify the stratigraphy.

In July and August a party consisting of Elmer Harp, Curator of the Dartmouth Museum; members of the Massachusetts Archaeological Society; Harvard and Radcliffe students; and Ripley Bullen, under the supervision of Frederick Johnson, excavated on what is probably the

site of the historic village of Teathicut or Titicut in eastern Massachusetts, which had been discovered and partly explored by the Massachusetts Archaeological Society.

Two strata, separated by a sterile zone were found. "The upper one may be divisible into several layers which contain stone artifacts from every known or postulated horizon in southeastern Massachusetts. One grave excavated by us contained colonial objects and a large 'collared' pot. Twenty-two other graves, excavated by the Massachusetts Society, have produced bundle burials, skeletons buried in red ochre, skeletons with no implements, and burials including large inventories of colonial objects.

"The lower horizon contains a few hearths and some artifacts which are common in many parts of eastern New England. At the present moment a geological hypothesis implying that the antiquity of the stratum may be measured in terms of several thousands of years is tenable. The geological work is continuing under the direction of Dr. Kirk Byran of Harvard University."

Mr. Bullen later directed a dig on the Winslow site, Marshfield, Massachusetts, a seventeenth century site overlying a small prehistoric shell heap which produced an association of broad triangular points, pottery, celts, and steatite vessel fragments. Beneath the shell occurred a prepottery horizon containing long narrow-bladed and semilozenge shaped points.

On a grant from the Indiana Historical Society, three expeditions concentrated upon the problems of identifying Lenape or Delaware archaeology. In Sussex County, New Jersey a party from the Rochester Museum of Arts and Sciences, comprising Edmund S. Carpenter, University of Pennsylvania; David W. Chase; Dr. Vernon Leslie; and William A. Ritchie, who was in charge, excavated on five sites during July and most of August, finding a total of 107 pits and 7 burials. Most of the work was done on the Bell-Philhower site, opposite Minisink Island in the Delaware River, large portions of which had previously been excavated by the Museum of the American Indian, Heye Foundation, and Mr. Charles A. Philhower of Westfield, New Jersey.

From 100 pits on this site the party obtained a large series of pottery, bone, and stone implements, chiefly pertaining to the Castle Creek Focus of the Owasco Aspect, which now appears to have been the prehistoric culture of the Munsey when they entered their traditional territory, evidently from southeastern New York. Subsequent acculturation by the Mohawk-Onondaga tribes to the north resulted in a series of ceramic modifications terminating in Iroquoian pottery forms. No corresponding changes in the stone and bone constituents of the culture could be traced. European trade goods occurred in the upper level of the site.

In late August and September Ritchie, assisted by David W. Chase and Charles A. Denman, excavated a rich Point Peninsula midden at Jack's Reef on the Seneca River, Onondaga County, New York, obtaining a large and important ceramic series showing many new variations. Of primary interest among the attendant bone and stone artifacts was the basal fragment of an Eastern Fluted (or basic Folsom type) point, found in association with typical Point Peninsula artifacts. This is the first recorded instance of such an association, but the significance is still not clear.

Investigations in the Unami territory of the Delaware were undertaken by the University of Michigan in cooperation with the Pennsylvania Historical and Museum Commission and the Department of Anthropology of the University of Pennsylvania.

"Excavations were conducted on several late horizon Delaware (Unami) sites in Buck County, Pennsylvania, under the direction of Richard S. MacNeish and John Witthoft, assisted by Albert C. Spaulding, all of the University of Michigan. One of the sites produced Indian material in association with early historic goods in the deeply buried stratum of a side-hill dump. The other important site exhibited two late manifestations, one above the other, over a pit containing a few sherds of Vinette 1 type pottery. This material is now in the process of analysis.

"During the spring and fall MacNeish undertook a preliminary analytical survey of Iroquois remains. Materials in private collections and museums were thoroughly examined, analyzed, classified, and photographed. The regional purpose of this endeavor was to determine the existence of differences in Iroquoian culture, and to attempt the reconstruction of Iroquoian prehistory using the direct historic approach."

The New Jersey State Museum under Dorothy Cross and Catherine McCann, has been investigating the problem of Delaware prehistory on two sites in Salem County, New Jersey from September 10 to date (October 8). Coarse-corded ware, steatite-tempered ware, steatite pot fragments, and a few arrow points and scrapers have thus far come to light. Previously Miss McCann had spent two weeks in assisting the Rochester Museum party in northern New Jersey.

The summer field program of the Museum of Anthropology of the University of Michigan is reported by E. F. Greenman as follows:

"In the field work at Killarney, Ontario, during July and August, the largest number of students since 1940, nine altogether, moved a considerable amount of earth on the three sites. The results were gratifying, especially at the site CH1, which is intermediate in elevation between the other two. The contemporaneity of the lower component of this site with the formation of the beach on which it lies, was fully demonstrated for the first time. The finding of three blades of quartzite and slate, all very much abraded by wave-action, puts the matter beyond any doubt. The only question concerns which recession of the lake over this site is registered in these implements. The fact that two are semilunar blades and the third is a Yuma-like stemmed point suggests very strongly that it was the first recession after occupation of the site GL1.

"Work on the other two sites brought forth little that is new. A considerable amount of time was spent in contour mapping at GL1, a project which will take several seasons. A small amount of dredging along the shore of the small lake adjoining this site brought up three quartzite flakes and provides a tentative answer to the question of a totally sterile portion of the lower part of this site.

"A new site, the first since 1940, was found near the

mouth of French River, thirty miles east of Killarney. The small amount of digging indicated it to be pre-Columbian, although by the geological chronology it cannot be more than about 250 years old since before that time it was under water. The two small potsherds found indicate Woodland Pattern." (*W.A.R.*)

SOUTHEAST

A recently organized group to serve both the professionals and non-professionals in Florida is the Florida Anthropological Society. The first *News Letter* of the Society states that their primary interest will be in the Florida Indian, past and present. In August, a conference was held in Daytona Beach to consider the problems of the adjacent areas. It is the plan of the Society to publish a quarterly *Bulletin* containing popular and technical papers.

Under the direction of John W. Griffin, of the Florida Park Service, excavations were continued through the summer in coastal Volusia County. The Cotten Site, "dating from the earliest known pottery horizon in the eastern United States," revealed fiber-tempered pottery and steatite bowls. The Green Mound, a thirty-foot-deep shell heap, contained check-stamped ware from bottom to top.

The Archaeological Society of North Carolina is again active with John Gillen, President. In their *News Letter* of June, H. M. Doerschuk describes a series of drilled stone Indian artifacts from a Yadkin River site.

Archaeological salvage operations along the Natchez Trace Parkway under construction by the National Park Service between Nashville, Tennessee, and Natchez, Mississippi, began August 18, with the excavation of the Bynum Site, a Miller II or III village and mound group three miles east of Houston, Mississippi.

John L. Cotter, in charge of field operations, is beginning work with a crew of 19 men. Cotter was transferred July 1 from Tuzigoot National Monument, Arizona, for the assignment, which will entail the working of nine major sites and which it is estimated will take approximately three years. Provision has been made in the Natchez Trace Archaeological Salvage program for a laboratory for processing field material. The laboratory will be located at Natchez Trace Parkway Headquarters near Tupelo, Mississippi, and will be in operation as soon as a qualified archaeologist can be employed to supervise this phase of the work. Field excavations have carried one mound of the group of six to completion. The mound contained a single, central, floor-level cremation burial group of four individuals flanked by a pair of logs over 20 feet long. A central burial had a pair of copper "ear spools" about each wrist.

Charles E. Snow, Department of Anthropology, University of Kentucky, is assisting in the Army Graves Registration Service Central Identification Laboratory in Hawaii and reports the work interesting and instructive. The Museum of Anthropology completed the preliminary survey of the Wolf Creek Dam reservoir, in southern Kentucky, during May and June. Thirty-five mounds and village sites were located. In July and August an earth mound was excavated in Woodford County, in central Kentucky. The mound contained a central sub-floor pit surrounded by an earth embankment. This pit was through the floor of a rectangular house pattern measuring 58 feet by 31 feet. The postholes of this pattern were not paired, but all the artifact material indicates Adena affiliations.

Frank J. Essene, of the University of California, has joined the staff at Kentucky and will present courses in ethnology.

Wesley R. Hurt, Jr. conducted an archaeological survey in the Chattahoochee Valley for the Alabama Museum of Natural History. The results were of considerable value since sites representing the major southeastern cultural periods were located in the area. Quite a few examples of Eastern Folsom points were noticed in private collections and some were obtained during the surface survey. Over a hundred sites provided sufficient material for accurate identification.

A new laboratory and storage building at Moundville was dedicated on September 24. Dr. Carl E. Guthe, Director of the New York State Museum, gave the main address. Steve Wimberly has completed a report on excavations in the Mobile and Clark County area. (*W.G.H.*)

MIDDLE AMERICA

After the doldrums of the last few years, it is a pleasure to be able to report the considerable field activity in the Middle American area during the first half of 1947.

Beginning in February, an expedition financed by the United Fruit Company and supervised by the Carnegie Institution of Washington worked at the now famous site of Bonampak in eastern Chiapas. Discovered in 1946, the site is outstanding for its one building of three rooms whose interior walls are completely covered with well-preserved and extremely fine colored frescoes, the most important so far discovered in the Maya area. The expedition consisted of Giles Healy, photographer for the United Fruit Company; J. Eric Thompson, Karl Ruppert, and Gustav Stromsvik of the Carnegie Institution; Antonio Tejeda, Director of the National Museum of Guatemala; and Augustin Villagrá, of the Institute of Anthropology of Mexico.

A. Ledyard Smith of the Carnegie Institution of Washington reports fruitful excavations at the site of Nebaj in the northern highlands of Guatemala. Cutting into the face of a mound across the plaza from one in which he discovered a rich tomb in 1946, he found a stratified series of burials and tombs dating from the early portion of the Initial Series Period up to the eleventh century. Outstanding among the objects recovered are an extremely fine large jade plaque of Classic Maya style, and a number of others from an earlier horizon.

Other activities of the Carnegie Institution Staff are outlined in the following note obtained from A. V. Kidder: "E. M. Shook inaugurated an archaeological survey of the Pacific coastal slope and coast plain of Guatemala in January, 1947. He began operations at Ayutla on the Mexican border with the intention of working eastward along the coast. His investigation was correlated with that of Philip Drucker of the Bureau of American Ethnology, who at the same time began a survey of the coast on the Mexican side of the border, working northwest. Shook excavated several mounds near Ayutla finding Middle Culture materials and remains of later date in stratigraphic order. He had only

worked a few weeks before word was received at Carnegie Institution's headquarters in Guatemala from Sr. Vitalino Robles, an ardent amateur archaeologist who has always cooperated most effectively with the Institution, that finds were being made on his coffee *finca* near Colomba, south of Quetzaltenango. Shook and Kidder accordingly went to Robles' Finca El Paraiso where we excavated a mound which produced a tomb and a pair of urn burials accompanied by quantities of an early form of plumbate pottery. At the same time Shook excavated what seems certainly to have been a communal subterranean sweat bath, an 8-meter circular structure with three encircling benches and a large central fire pit. Later in the season Shook spent some time on the United Fruit Company's new development at Tiquisate, where clearing and drainage operations were bringing to light great quantities of archaeological material. With the cooperation of the United Fruit Company officials, Shook was able to get important data and collections on coastal cultures of the Early and Late Classic Periods.

"At Zacaleu, where the United Fruit Company is engaged in a five-year project of excavation and repair of a large ceremonial center, the second season's work was carried out by John M. Dimick, Director, with the assistance of Aubrey S. Trik, Stanley M. Boggs, and Gustav Stromsvik. Several important structures including a ball court were cleared and repaired. During the course of the work a large number of graves were found, mostly beneath staircases, and in that position at the principal pyramid there was opened a large tomb rich in pottery and jades. It had been believed that Zacaleu was occupied at the time of the Spanish conquest and had been the capital of the Mam Maya, who took refuge there and long defended themselves when the Spanish entered that region. The excavations, however, have yielded little or no material of the proto-historic period, all finds to date being referable to Classic times—roughly contemporaneous with Tzakol of Peten—and of a later period during which effigy plumbate was being manufactured."

The Middle American Research Institute of Tulane University also had an expedition in Guatemala, as related in the following note from its director: "Robert Wauchope, Director of the Middle American Research Institute of Tulane University, and Ray Marino, a Tulane student in anthropology, returned June 25 from an archaeological field season in the Guatemala highland. They excavated first at Zacualpa, Dept. of Quiche, where they concentrated on two objectives: locating and obtaining data on the Pokom Phase of Zacualpa chronology, and correlating the major Zacualpa structures with the phases previously established in the 1935–36 excavations there. The expedition then moved to Utatlan and sank ten test pits at various localities in this Quiche capital occupied at the time of the Spanish conquest. When the rainy season made further excavations impracticable, Wauchope and Marino took surface collections at Iximche, the ancient Cakchiquel capital at the time of the Conquest, and at many other highland sites. They then spent two months at San Sebastian Lemoa, studying the pottery and other artifacts obtained during the season."

Philip Drucker made a survey of the Pacific Coast of Chiapas for the Smithsonian Institution and the National Geographic Society. At this writing no summary account of this work is available, but a few notes culled from a personal letter of Drucker's will serve to indicate the range of his finds. He discovered many new sites, including a number of late ones which he surmises are Pipil. There are several good Plumbate sites, and one of practically pure Miraflores-Finca Arizona materials and thus tolerably early. Also there are a number of ceramic complexes which as yet he has not been able to tie into any known ones. Of great interest is his mention of a kitchen midden site three meters high with pottery in the top layers and none in the bottom.

In Mexico proper, many of the varied field projects of the Instituto Nacional de Antropología were continued. Jorge Acosta spent a number of months at Monte Alban, concerning himself largely with the reconstruction of buildings and, during the latter part of June, was planning to begin work at Tula. Hugo Moedano was at La Quemada in Zacatecas while Garcia Payón continued his excavations at various sites in central Vera Cruz. In the Huasteca, Wilfrido Du Solier continued work at Tamuin where, in previous years, he found some well-preserved frescoes, and also sampled neighboring sites. The work at Tlatelolco, under the direction of Pablo Martínez del Río, progresses steadily, and in the early part of July excavations under the general direction of Miguel Covarrubias were being planned at the archaic site of Tlatilco.

Gordon Ekholm of the American Museum of Natural History, assisted by Rafael Orellana of the National Museum of Mexico and for part of the time by Roberto Pavón of Panuco, spent March and April in a survey of a portion of northern Vera Cruz. The surface survey extended from the Panuco River south to as far as Papantla, but with special concentration on the region about Tuxpan. Excavations were conducted at the large site of Tabuco near Tuxpan, including one stratigraphic cut five meters in depth. Materials from this appear to correlate in time with those from Periods II to VI in the Tampico-Panuco sequence. Several large mesa-top sites further inland were explored, including two with walls constructed around pyramids and with other unusual architectural features. Later in the season a trip was made to San Lorenzo-Tenochtitlan in southern Vera Cruz to make a cast of one of the large "Olmec" heads discovered by the Stirling expedition in 1946.

Throughout the first half of 1947, Helmut de Terra was continuing his search for early man sites in various portions of Central Mexico. His most important discovery was that of a human skeleton found under conditions indicating considerable antiquity at Tepexpan, north of Lake Texcoco. A preliminary account of this find has been published in a previous number of this journal (Vol. 13, No. 1, pp. 40–4). (*G.F.E.*)

SOUTH AMERICA

Sr. Rafael Larco Hoyle, Director of the Museum of Chiclín, Peru, transmits the following concerning the work done under his direction at the museum during the past years, 1945–46.

"Several survey trips were made to various parts of

Peru, including the south coast region of Nazca and Ica, the central highlands near Ayacucho, the Callejón de Huaylas and Chavín de Huantar, and the north coast valley of Lambayeque. These reconnaissance tours were, in part undertaken to gain more information concerning new acquisitions of the museum and, in part, to clarify certain theoretical concepts concerning the reconstruction of Peruvian prehistory. As a result of these excursions, Sr. Larco feels that the center of the 'Tiahuanacoid' diffusion was the site of Hauri near Ayacucho; that Mochica influence was appreciable in the Callejón; and that the Lambayeque Valley was the center of the style known as 'Cursive' or 'Abigarrada.'

"Excavations in the home valley of Chicama produced some interesting results. Among these was the isolation of Early Mochica graves which also contained Virú-type vessels. An excursion to the Cupisnique and Pampa de Paiján sectors of the Chicama Valley led to the discovery of great quantities of percussion-flaked instruments, presumably of the preceramic hunting period of coastal Peru. Semicircular stone house foundations were also found in the same regions as the stone tools. Nearby, was what appeared to be a temple structure or base of such a structure.

"Work also progressed on a study which Sr. Larco is preparing concerning his theories of a basic common origin for Maya glyphs and the ideographic symbols as used by the Mochica. On several occasions during this period trips were made to the United States, Mexico, and Guatemala for the purpose of studying museum collections."

Dr. Walter Dupouy, Director of the Museo de Ciencias Naturales of Caracas, Venezuela, has communicated the following information concerning the considerable archaeological activity in his country during the year 1946.

"*Excavations.* Field work, under the direction of Professor José M. Cruxent, was carried out by mound excavations at the well-known site of Tocorón, Estado Aragua. Several test pits were made in two mounds of this famous group. The work was under the auspices of the Commission of Anthropology of the Sociedad de Ciencias Naturales La Salle.

"Professor Cruxent also participated in the investigation of a shell mound in the zone of Manicuare, Araya Peninsula, Estado Sucre. This was a combined program including specialists in the fields of Zoology, Biology, Geology, and Botany, as well as archaeology. The material found is of special interest in that the stone and shell artifact series have a close resemblance to the shell mound artifacts from the Island of Pines (western Cuba). Complete excavation of the Manicuare mound was not undertaken, but it is hoped that work may be resumed here in the future.

"In these excavations Cruxent was assisted by various members of the Sociedad LaSalle. The participation of so many interested persons augurs extremely well for the growing science of archaeology in the Republic.

"*Surveys.* In a survey beginning in Estado Miranda, near Caracas, Cruxent located petroglyphs on the Quebrada de Galindo. In the 'El Topo' region of the Federal District he discovered an interesting midden site near the Tacagua Falls. His conclusions concerning this latter location is that the material from the midden is similar to that from El Topo and may also be related to an artifact series from a site at the mouth of the Tacagua visited by Cruxent and Irving Rouse in 1946.

"Sojourns were also made to the Petaquire Dam sector and to the Cerro Machado, in Estado Miranda and the Federal District respectively. On the small table land of the Cerro Machado Professor Cruxent located several village sites, without mounds. The Museo de Ciencias Naturales hopes to excavate the Cerro Machado site in 1947.

"The Baruta-El Hatillo area, Estado Miranda, was also explored by a scientific party, including Cruxent, and several papers were prepared upon the prehistoric aspects of the zone.

"Cave and rock shelter paintings have also been reported. Mr. Erimar von der Osten describes some from the Island of Pararuma in the Orinoco River, and Professor Cruxent noted others near Puerto Páez, on the Orinoco." (*G.R.W.*)

EARLY MAN

The University of Nebraska State Museum has conducted paleontological explorations and excavations along Medicine Creek, a tributary of the Republican River, on numerous occasions since 1927. However, the recent decision of the Bureau of Reclamation to place a reservoir on the Creek has intensified the work of the Museum in this area of Nebraska. Consequently in 1946 and 1947 many new paleontological sites were discovered and old ones reexamined. The Museum has obtained a cooperative agreement with the Smithsonian Institution and the National Park Service for the salvage of paleontological specimens in the reservoir area in the Republican Valley. Two faunal assemblages heretofore almost unknown in the Great Plains have been discovered in the vicinity of Lime Creek, a small tributary of Medicine Creek.

One is a very late Pliocene fauna which contains many new kinds of extinct mammals including a South American type of a giant saber-toothed marsupial, the first reported occurrence of this form in North America. This paleontological material will throw much new light on the Pliocene-Pleistocene boundary line problem.

The second faunal assemblage is from the base of a late Pleistocene terrace (Republican River Terrace 2).[1] The Paleontological material obtained in this terrace is of especial interest in the Great Plains region because for the first time an extensive fauna has been discovered in deposits of this age, and directly associated with the fossil remains were numerous artifacts of Early Man. Three sites (localities Ft-41, Ft-42, and Ft-50) containing this association have been located. Although the chief level containing the paleontological and archaeological specimens is buried 47.5 feet below the top of the terrace, evidence of human habitation occurs at several levels up to 9.5 feet above the lowest. The producing horizons are in a silt but are restricted to carbonaceous zones which represent old vegetation-covered surfaces. The silt containing indistinct car-

[1] For terrace terminology see C. Bertrand Schultz and Thompson M. Stout, "Pleistocene Loess Deposits of Nebraska," *American Journal of Science*, Vol. 243, pp. 231–44, New Haven, 1945; also, "Pleistocene Mammals and Terraces in the Great Plains," *Bulletin, Geological Society of America*, 1947 (in press).

bonaceous zones continues upward to within 23 feet of the top of the section, becoming more loessic in the upper portion. Above the silt lies a loess deposit 17 feet thick which has tentatively been correlated with the Bignell.[2] Since the Lime Creek sites are strategically located in relation to other known loess and terrace deposits, it is possible that an exact dating may be arrived at in the near future. It does appear, however, that this 17-foot loess layer was deposited during the Mankato glacial stage of the Wisconsin. A distinct soil zone occurs at the top of this loess and is buried by a more recent loess (probably Cochrane), which in turn has a mature recent soil developed on it. The geological information at hand strongly suggests that Early Man occupied the Lime Creek area prior to the climax of the Mankato glaciation.

Fortunately, a very extensive program for the study of the Pleistocene of the Great Plains has been in progress during the past fifteen years by the Nebraska Geological Survey, the University of Nebraska State Museum and the Department of Geology, the United States Geological Survey, the Kansas State Geological Survey, and the Iowa State Geological Survey. The work has been well coordinated and as a result the above tentative dating of the Lime Creek terrace sites is possible at this time. The complete solution of the problem of dating is dependent upon regional relationships of the terraces and terrace fills, most of which seem to be rather definitely dated. Archaeological and paleontological specimens now are known from basal Terrace 2 sites not only in the Republican Valley but also in the drainages of the North Platte, Niobrara, White, and Cheyenne rivers.

A method has been devised whereby the terraces of the Republican Valley are being mapped by tracing AAA aerial photographs with the use of a stereoptical viewer. The tracings are being checked in the field in order to establish positive identification of each terrace remnant. The composite master map resulting from these tracings has an approximate scale of 3 inches per mile. The mapping has been a cooperative effort carried on in the field by Dr. Gilbert C. Lueninghoener of Midland College and the writers. Prof. E. C. Reed of the Nebraska Geological Survey and Dr. James Thorpe, Principal Soil Correlator of the Great Plains States for the United States Department of Agriculture, Soil Survey, are aiding in the interpretation and dating of the soils and terraces involved in the study.

Although time has permitted only partial preparation of the fossils found associated with the artifacts, a brief survey of the material at hand reveals that there are at least seventeen mammalian forms represented as well as examples of reptiles, amphibians, and birds. Preliminary observations suggest distinct differences between several of the fossil and modern forms, but positive identification must wait for further preparation and comparisons. The following is a tentative list[3] of the mammals represented in the three Terrace 2 sites in the Lime Creek area: (1) *Blarina* (Shrew); (2) *Lepus* (Jack Rabbit); (3) *Sylvilagus* (Cottontail); (4) *Cynomys* (Prairie-dog); (5) *Geomyid* (Pocket Gopher); (6) *Perognathus* (Pocket Mouse); (7) *Castor* (Beaver); (8) *Peromyscus* (Deer Mouse); (9) *Synaptomys* (Lemming Mouse); (10) *Microtus* (Meadow Mouse); (11) *Canis* (Coyote); (12) *Procyon* (Raccoon); (13) *Taxidea* (Badger); (14) *Odocoileus* (Deer); (15) Cervid, large form (Deer); (16) Antilocaprid (Antelope); (17) *Bison* (Bison).

Thus far the sites in the base of Terrace 2 have only been tested but extensive excavation is planned for the 1948 field season. However, the small areas excavated at the three sites yielded over one hundred identifiable artifacts of stone, bone, and antler. Only six points were found *in situ* and these can be classified as NDa, ND, and NAb3, according to Strong.[4] An example of the NDa type has a slightly indented base which has parallel sides. The point displays excellent ribbon flaking at right angles to its long axis. Very delicate retouching is noted all along the edges of the point. An example of the ND type is straight-sided and has chipping similar to the NDa specimen described above. An NAb3 type point has a slightly concave base and has ribbon flaking which is placed obliquely to the long axis. The most abundant artifacts are blades of a distinctive type. Using Strong's classification of points as a guide for shape only, these blades could be considered as NAb2 but approaching ND in some instances. Approximately 20 percent of the artifacts obtained from the sites are of this type. These blades vary in size from the largest which is 179.7 mm. long and 52.7 mm. wide at the base, to the smallest which is 96.8 mm. long and 29.0 mm. wide at the base. The workmanship on the blades is not extraordinary. Numerous other blades, knives, and scrapers (including the "snub-nosed" type) were also encountered. A tremendous amount of fortuitous flakes were recovered, definitely demonstrating prolonged occupation of the camp sites. Five worked pieces of antler and five bone tools including two bone awls are represented in the inventory. Perhaps the most interesting bone tool is a highly polished needle 84 mm. long and 4 mm. wide, with a small eye 5 mm. from the end.

The field work during the 1947 season in the Lime Creek area was carried on by a party of ten led by Allen Graffham under the supervision of the writers. Every effort was made to establish the true relationship of the archaeological and paleontological material to the terrace. Representatives from a number of institutions were invited to visit the localities and on various occasions the following interested scientists examined the sites: Dr. Kirk Bryan of the Department of Geography and Geology, Harvard University; Dr. B. H. Burma, Dr. A. L. Lugn, Prof. E. F. Schramm, and Prof. T. M. Stout of the Department of Geology, University of Nebraska; Dr. John Champe and Dr. Jack Roberts of the Laboratory of Anthropology, University of Nebraska (at the end of the field season Dr. Champe represented the Smithsonian Institution at the sites); Mr. Robert Cummings, Dr. Waldo Wedel, and Dr. Theodore E. White of the River Basin Surveys of the Smithsonian Institution; Dr. Loren C. Eiseley of the Department of Anthropology, University of Pennsylvania; Mr. A. T. Hill of the Nebraska State Historical Society; Dr. J. D. Jennings of the National Park Service; and Mr. H. P. Zuidema of the Department of Geology, University of Michigan. (*C. Bertrand Schultz* and *W. D. Frankforter.*)

[2] Schultz and Stout, *op. cit.*

[3] Only generic determination is given.

[4] William Duncan Strong, "An Introduction to Nebraska Archaeology," *Smithsonian Miscellaneous Collections*, Vol. 93, No. 10, p. 88, Fig. 7, Washington, 1935.

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